SECOR

SECOR INTERNATIONAL INCORPORATED

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DATE: May 10, 2006

ARCO SEMI-ANNUAL GROUNDWATER MONITORING REPORT

Facility No.: 3037 Address: 915 Camino Del Rio South, San Diego, CA
ARC Environmental Manager: Kyle Christie
Consulting Co./Contact Person: SECOR/Marci Richards and Kurt R. Myers
SECOR Project No.: 08BP.03037.07
Primary Agency/Regulatory ID No.: County of San Diego, Department of Environmental Health, Land and Water Quality Division, Site Assessment and Mitigation Program (SAM), (Danny Martinez) / Case #H05125-002

WORK PERFORMED THIS REPORTING PERIOD
[Fourth Quarter - 2005 through First Quarter - 2006]:

1. Performed first 2006 semi-annual groundwater monitoring and prepared report.
2. Performed the Corrective Action Plan (CAP) public notification process.

WORK PROPOSED FOR NEXT REPORTING PERIOD
[Second Quarter - 2006 through Third Quarter - 2006]:

1. Conclude CAP public notification period.
2. Submit first 2006 semi-annual groundwater monitoring report.
3. Perform second 2006 semi-annual groundwater monitoring and reporting (if required).

Current Phase of Project:	Monitoring	(Assmnt, Remed., etc.)
Frequency of Sampling:	Semi-Annual	(Quarterly, etc.)
Frequency of Monitoring:	Semi-Annual	(Monthly, etc.)
Are Liquid Phase Hydrocarbons (LPH) Present On-site:	No	(Yes/No)
Cumulative LPH Recovered to Date:	None	(gallons)
LPH Recovered This Quarter:	None	(gallons)
Bulk Soil Removed to Date:	Unknown	(cubic yards)
Bulk Soil Removed This Quarter:	None	(cubic yards)
Water Wells or Surface Waters w/in a 2000 ft. Radius & Their Respective Directions:	San Diego River 1,500 feet to the north	(Distance and direction)
Current Remediation Techniques:	Natural Attenuation	(SVES, LPH Removal)
Permits for Discharge:	N/A	(NPDES, POTW, etc.)

DATE: May 10, 2006

ARCO SEMI-ANNUAL GROUNDWATER MONITORING REPORT (Continued)
ARCO Facility #3037

Approximate Depth to Groundwater:	13.12 to 23.00	(Measured Feet)
	Northwest	(Direction)
Groundwater Gradient:	0.002	(Magnitude)
Groundwater Beneficial Use:	Yes	(Yes/No)

DISCUSSION: On March 17, 2006, SECOR personnel gauged, purged, and sampled three of the four groundwater monitoring wells and four of the five vadose zone/groundwater monitoring wells associated with the site (Figure 2) along with the groundwater monitoring well known as City Well MW-2, which is owned by the City of San Diego. On March 30, 2006, SECOR personnel gauged, purged, and sampled well MW-3. In total, SECOR purged and sampled nine wells for the first semi-annual 2006 groundwater event. Field observations and data were documented on a monitoring well gauging log and well purging/sampling logs (attached). The depth to water ranged from 13.12 feet below ground surface (bgs) in City Well MW-2 to 23.00 feet bgs in well MW-1, as presented in Table 1. Groundwater elevations ranged from 20.24 to 24.93 feet above mean sea level (MSL). Due to suspect data from wells MW-2 and VW-2, these groundwater elevations were excluded from the gradient map (Figure 3). The estimated groundwater flow direction was to the northwest at an approximate gradient of 0.002 (Figure 3).

Groundwater samples were collected from the wells in accordance with the attached purging and sampling procedures. The groundwater samples were collected and analyzed for gasoline-range organics $C_6 - C_{12}$ (GRO); for benzene, toluene, ethylbenzene, and total xylenes (BTEX); acetone; and for the fuel oxygenates methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA), ethyl tert-butyl ether (ETBE), di-isopropyl ether (DIPE), tert-amyl methyl ether (TAME), and ethanol. The analytical results are summarized in Tables 2 and 3. GRO, benzene, and MTBE results are shown on Figure 4, and benzene and MTBE isoconcentration contours are presented on Figure 5. Hydrographs showing changes in groundwater elevation and benzene and MTBE concentrations with time are also attached.

CONCLUSIONS & RECOMMENDATIONS: In general, the groundwater elevations have decreased since March 2005. The analytical results for the first quarter 2006 are consistent with previous results with the exception of VW-1. Concentrations from VW-1 indicate decreases in all analytes with the exception of TBA, which suggests biodegradation of the hydrocarbons and MTBE. Sheen was observed in well VW-1. The calculated groundwater elevation for well VW-2 has been historically inconsistent compared to elevations of the surrounding wells. SECOR recommends continued semi-annual groundwater monitoring and sampling, which includes the City-owned well in the groundwater monitoring program, until the case is closed.

SUMMARY OF UNUSUAL ACTIVITY: Initiated the public review process for the CAP.

AGENCY DIRECTIVE REQUIREMENTS: Conduct public review process for CAP; conduct semi-annual monitoring and reporting.

DATE: May 10, 2006

ARCO SEMI-ANNUAL GROUNDWATER MONITORING REPORT (Continued)
ARCO Facility #3037

STATEMENT OF LIMITATIONS

All work was performed under the supervision of a California professional geologist. The information contained in this report represents our professional opinions, and is based in part on information supplied by the client and/or third parties. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. No other warranty, express or implied, is made or intended

Melissa Garrett
Project Scientist

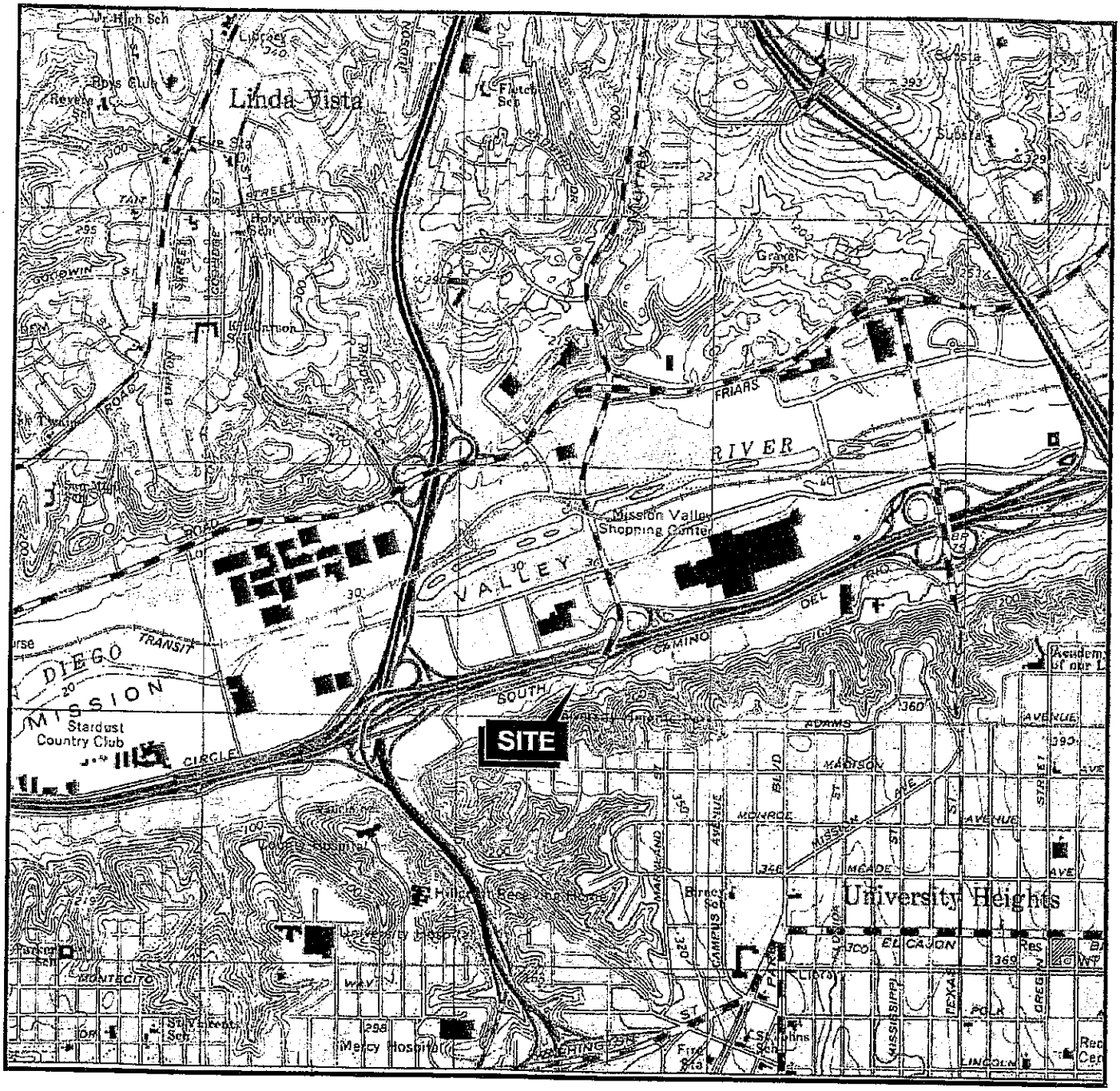
Kurt R. Myers, CEG #1790
Senior Geologist

PROFESSIONAL GEOLOGIST
KURT R. MYERS
No. 1790
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

ATTACHED:

- Site Location Map (Figure 1)
- Site Plan (Figure 2)
- Groundwater Gradient Map, March 17, 2006 (Figure 3)
- GRO, Benzene and MTBE Concentrations in Groundwater, March 17 & 30, 2006 (Figure 4)
- Benzene and MTBE Isoconcentration Map, March 17 & 30, 2006 (Figure 5)
- Summary of Groundwater Elevations, 2003 to Present (Table 1)
- Summary of Groundwater Analytical Results, 2003 to Present (Table 2)
- Summary of Additional Oxygenates Analytical Results 2003 to Present (Table 3)
- Well Hydrographs
- Monitoring Well Purging and Sampling Procedures
- Monitoring Well Gauging Log
- Well Purging/Sampling Logs
- Laboratory Reports and Chain-of-Custody Documentation

cc: Mr. Kyle Christie - Atlantic Richfield Company
Barbara J. and Thomas H. Handley Trust



QUADRANGLE LOCATION

N

0 1000 2000

1 INCH = 2000 FEET

Reference: U.S.G.S., 1996, La Jolla, California Quadrangle Topographic 7.5' Series.

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San Diego, California

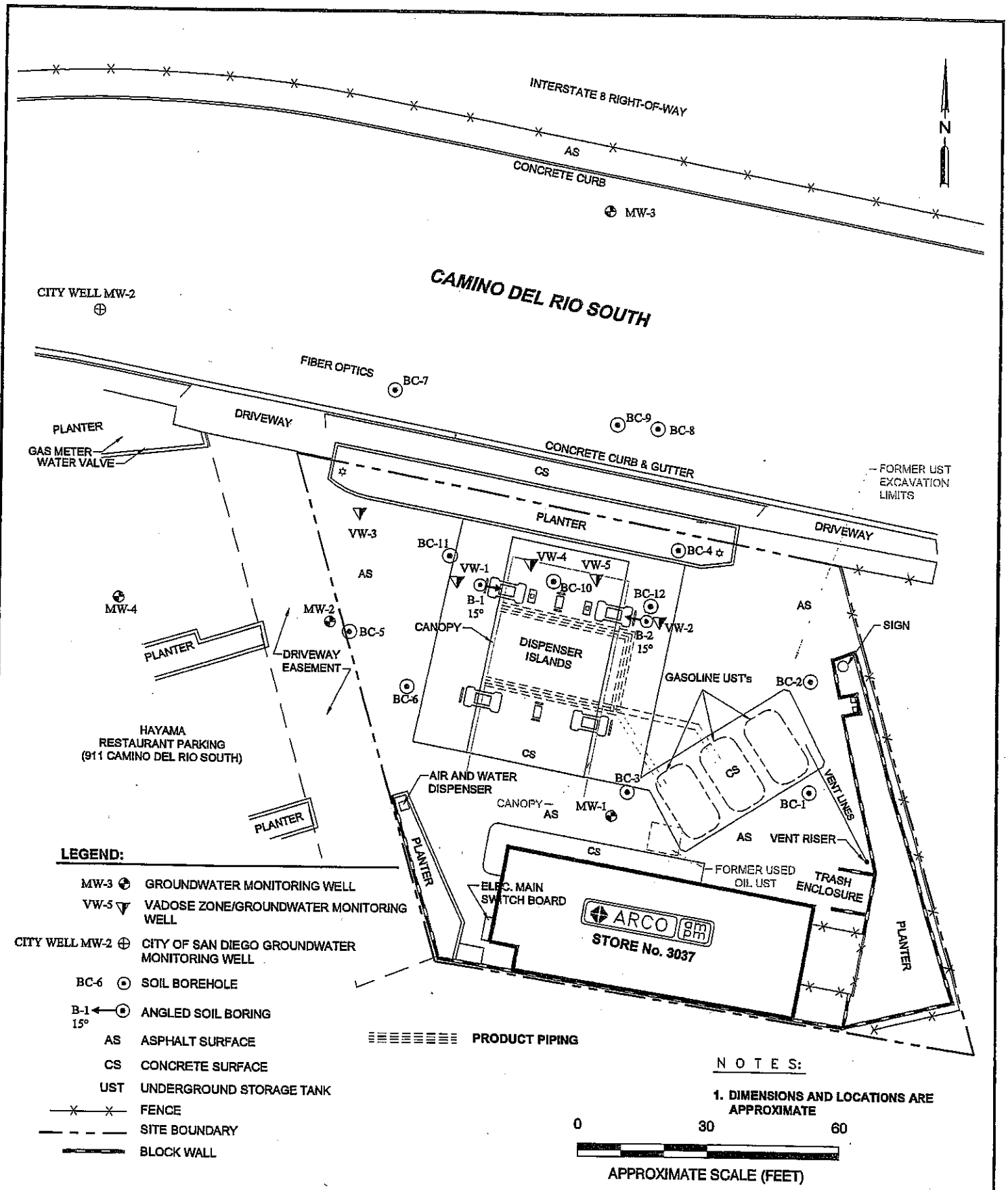
SITE LOCATION MAP

FIGURE: 1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
08BP.U3037.05	RO	SM	Frem	03/29/05

FILEPATH: Q:\CADD-08\PROJECTS 2005\ARCO\3037-2K5\3037-USGS.DWG MODIFIED BY ROCAMPO ON SEP 30, 2005 - 15:53

3037-USGS



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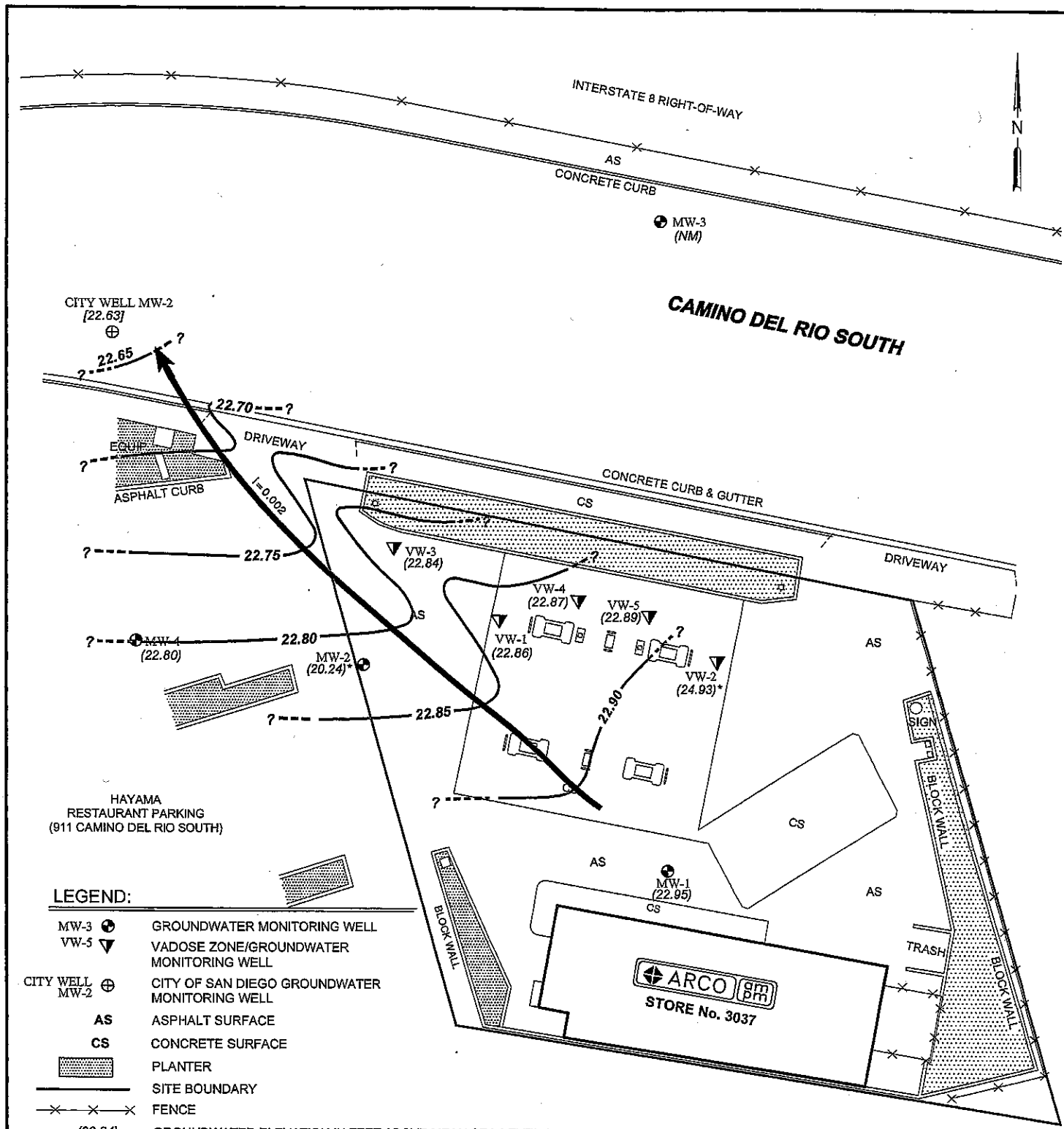
FOR:			FIGURE:
ARCO FACILITY #3037 915 Camino Del Rio South San Diego, California		SITE PLAN	2
JOB NUMBER: 08BP.U3037.05	DRAWN BY: RO	CHECKED BY: SM	APPROVED BY: Kem	DATE: 03/29/05

FILEPATH:Q:\CADD-08\PROJECTS 2005\ARCO\3037-2K5\3037SP3-04.DWG|ROCAMPO|SEP 30, 2005 AT 15:54|LAYOUT: MODEL

3037SP3-04



LEGEND:

MW-3	GROUNDWATER MONITORING WELL
VW-5	VADOSE ZONE/GROUNDWATER MONITORING WELL
CITY WELL MW-2	CITY OF SAN DIEGO GROUNDWATER MONITORING WELL
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
	PLANTER
	SITE BOUNDARY
	FENCE
(22.84)	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
?--- 22.80 —	GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MSL. DASHED WHERE INFERRED. QUERIED WHERE UNKNOWN.
i=0.002	APPROXIMATE GROUNDWATER FLOW DIRECTION AND HYDRAULIC GRADIENT (i) IN FEET PER FOOT
(NM)	NOT MEASURED
*	DATA NOT USED IN CONTOURING

0 30 60

APPROXIMATE SCALE (FEET)

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San Diego, California

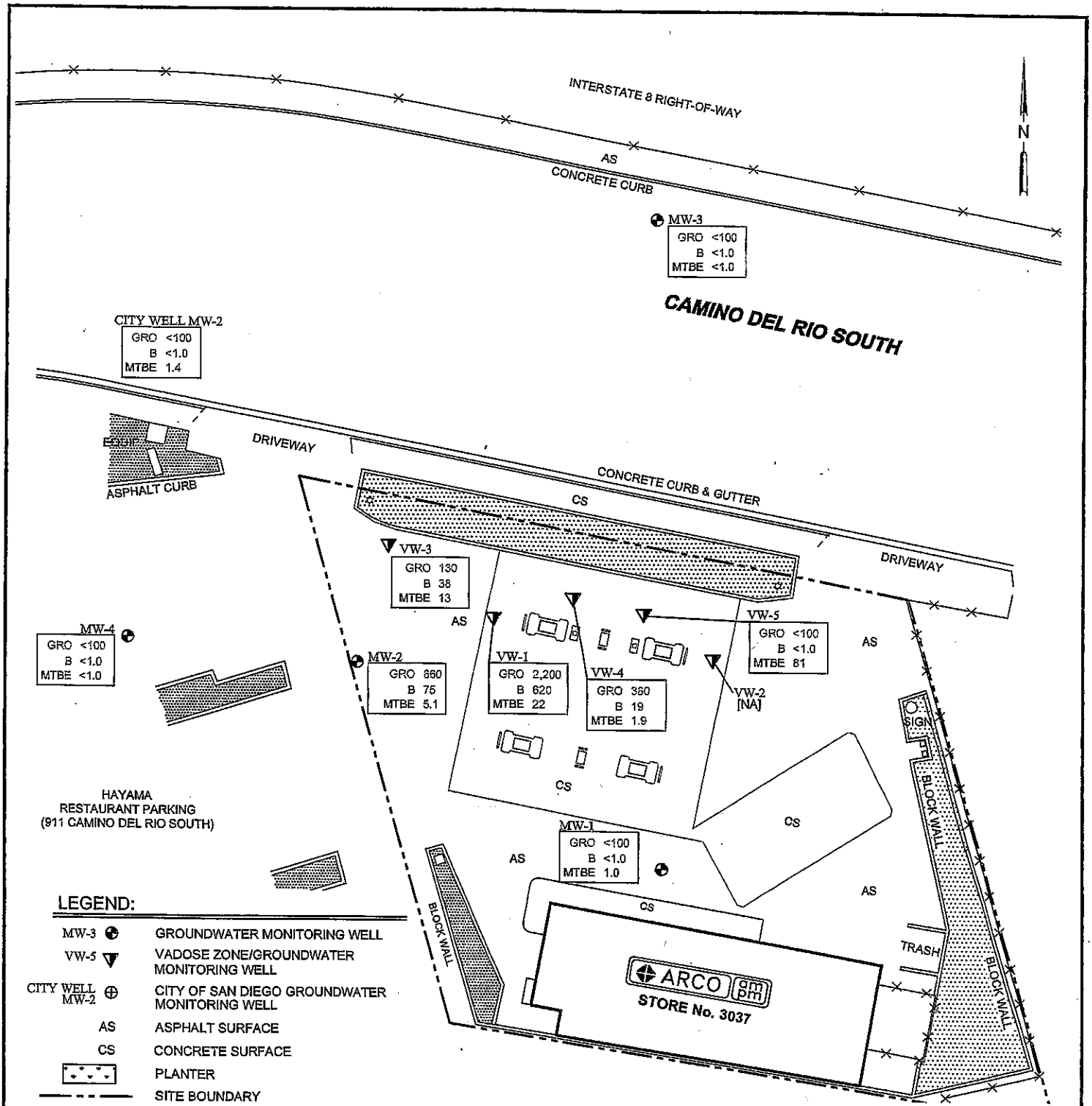
GROUNDWATER GRADIENT MAP
MARCH 17, 2006

FIGURE: 3

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
08BP.03037.07	G. KAYA	MG	KRM	4/25/06

FILEPATH:Q:\CADD-08\PROJECTS 2006\BP-ARCO\3037-2K6\3037GW3-06R.DWG|ROCAMPO|APR 28, 2006 AT 16:50|LAYOUT: F3 GWM

3037GW3-06R



LEGEND:

MW-3	GROUNDWATER MONITORING WELL
VW-5	VADOSE ZONE/GROUNDWATER MONITORING WELL
CITY WELL MW-2	CITY OF SAN DIEGO GROUNDWATER MONITORING WELL
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
	PLANTER
	SITE BOUNDARY
	FENCE
GRO <500 B <0.50 MTBE <1.0	GROUNDWATER SAMPLE ANALYTICAL CONCENTRATIONS IN MICROGRAMS PER LITER (μg/L)
GRO	GASOLINE - RANGE ORGANICS C_6 - C_{12}
B	BENZENE
MTBE	METHYL-TERT-BUTYL ETHER
<	CONCENTRATION LESS THAN INDICATED LABORATORY REPORTING LIMIT
[NA]	NOT ANALYZED

0 30 60

APPROXIMATE SCALE (FEET)

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FOR:
ARCO FACILITY #3037
915 Camino Del Rio South
San Diego, California

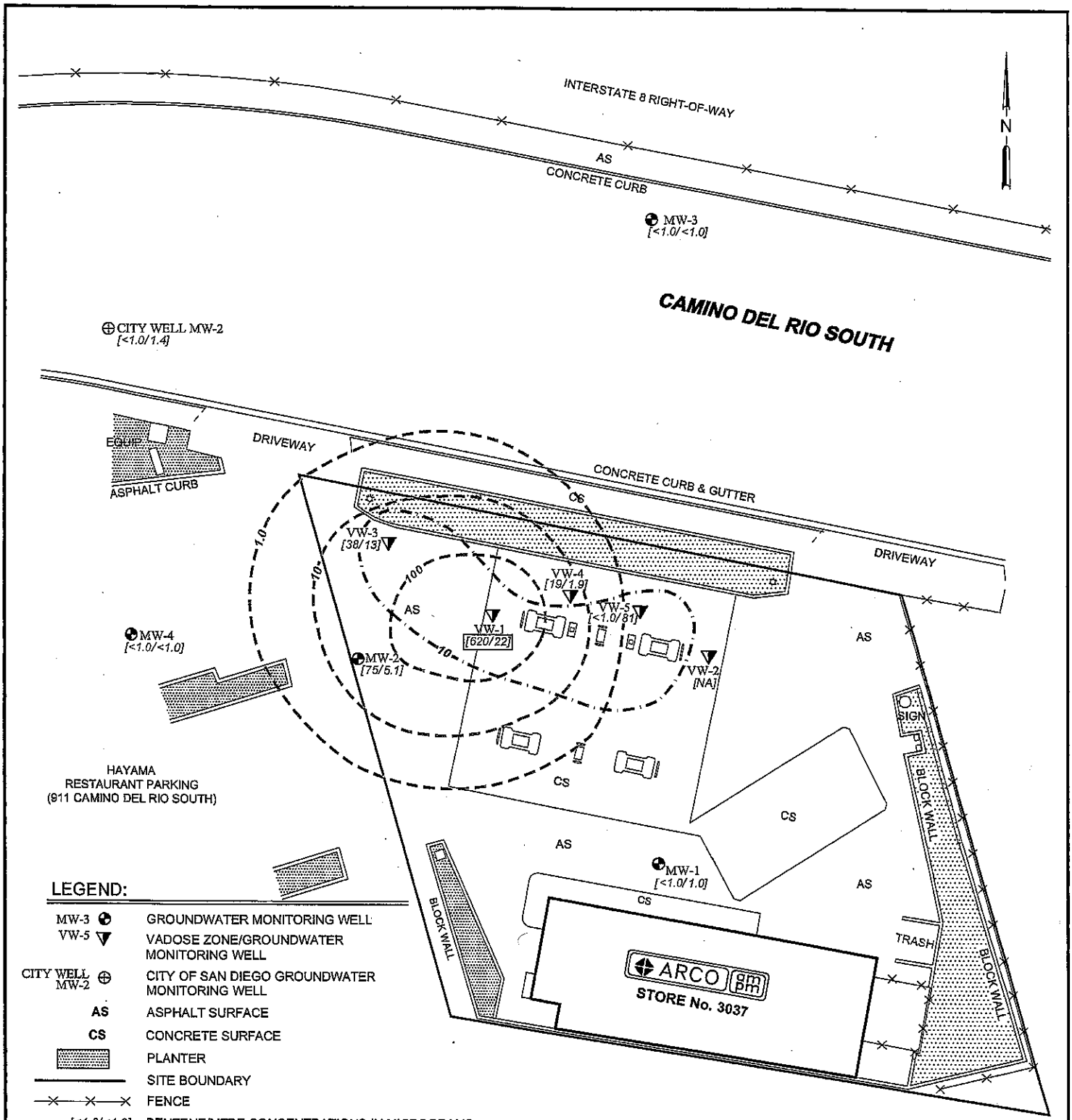
GRO, BENZENE AND MTBE CONCENTRATIONS IN GROUNDWATER MARCH 17 & 30, 2006

FIGURE: 4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
08BP.03037.07	G. KAYA	MG	KRM	4/20/06

FILEPATH:Q:\CADD-08\PROJECTS 2006\BP-ARCO\3037-2K6\3037CON3-06.DWG|ROCAMPO|APR 21, 2006 AT 11:28|LAYOUT: F4 CONS

3037CON3-06.DWG



LEGEND:

MW-3	GROUNDWATER MONITORING WELL
VW-5	VADOSE ZONE/GROUNDWATER MONITORING WELL
CITY WELL MW-2	CITY OF SAN DIEGO GROUNDWATER MONITORING WELL
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
	PLANTER
	SITE BOUNDARY
	FENCE
[<1.0/<1.0]	BENZENE/MTBE CONCENTRATIONS IN MICROGRAMS PER LITER (μg/L)
10 ?	ESTIMATED BENZENE ISOCONCENTRATION CONTOUR IN μg/L, QUERIED WHERE UNKNOWN
10 ?	ESTIMATED MTBE ISOCONCENTRATION CONTOUR IN μg/L, QUERIED WHERE UNKNOWN
MTBE	METHYL TERT-BUTYL ETHER
<	BELOW LABORATORY REPORTING LIMIT
[NA]	NOT ANALYZED

0 30 60

APPROXIMATE SCALE (FEET)

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BENZENE AND MTBE
ISOCONCENTRATION MAP
MARCH 17 & 30, 2006

FIGURE: 5

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
08BP.03037.07	G. KAYA	MG	KRM	4/20/06

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3037ISO3-06.DWG

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2003 TO PRESENT

ARCO Facility #3037

Well ID/ Surveyed Well Elevation[1] (Feet MSL)	Date	Depth to Static Water (feet)	Apparent LPH Thickness (feet)	Groundwater Elevation[2] (feet MSL)
City Well MW-2[3] 35.75	02/18/03	Not Measured		
	06/16/03	13.33	0.00	22.42
	09/03/03	Not Measured		
	11/26/03	13.47	0.00	22.28
	03/02/04	13.28	0.00	22.47
	06/17/04	13.48	0.00	22.27
	09/17/04	13.64	0.00	22.11
	03/02/05	11.81	0.00	23.94
	09/01/05	12.52	0.00	23.23
	03/17/06	13.12	0.00	22.63
MW-1 45.95	11/07/02	23.69	0.00	22.26
	02/18/03	23.16	0.00	22.79
	06/16/03	22.71	0.00	23.24
	09/30/03	22.96	0.00	22.99
	11/26/03	23.11	0.00	22.84
	03/02/04	22.94	0.00	23.01
	06/17/04	23.15	0.00	22.80
	09/17/04	23.39	0.00	22.56
	03/02/05	21.20	0.00	24.75
	09/01/05	22.16	0.00	23.79
	03/17/06	23.00	0.00	22.95
MW-2 42.38	11/07/02	20.30	0.00	22.09
	02/18/03	19.85	0.00	22.53
	06/16/03	19.31	0.00	23.07
	09/30/03	19.59	0.00	22.79
	11/26/03	19.76	0.00	22.62
	03/02/04	19.39	0.00	22.99
	06/17/04	19.71	0.00	22.67
	09/17/04	19.97	0.00	22.41
	03/02/05	17.97	0.00	24.41
	09/01/05	18.70	0.00	23.68
	03/17/06	22.14	0.00	20.24
MW-3 41.86	11/07/02	19.85	0.00	22.02
	02/18/03	19.40	0.00	22.46
	06/16/03	18.89	0.00	22.97
	09/30/03	19.13	0.00	22.73
	11/26/03	19.24	0.00	22.62
	03/02/04	19.17	0.00	22.69
	06/17/04	19.38	0.00	22.48
	09/17/04	19.54	0.00	22.32
	03/02/05	17.54	0.00	24.32
	09/02/05	18.36	0.00	23.50
	03/30/06	19.05	0.00	22.81

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2003 TO PRESENT
ARCO Facility #3037

Well ID/ Surveyed Well Elevation[1] (Feet MSL)	Date	Depth to Static Water (feet)	Apparent LPH Thickness (feet)	Groundwater Elevation[2] (feet MSL)
MW-4	02/18/03	Installed on 3/18/03		
41.24	06/16/03	18.23	0.00	23.01
	09/30/03	18.48	0.00	22.76
	11/26/03	Not Measured - Car Parked Over Well		
	03/03/04[4]	18.48	0.00	22.76
	06/17/04	18.74	0.00	22.50
	09/17/04	18.86	0.00	22.38
	03/02/05	16.88	0.00	24.36
	09/01/05	17.65	0.00	23.59
	03/17/06	18.44	0.00	22.80
VW-1	11/07/02	21.74	0.00	22.12
44.44	02/18/03	21.79	0.00	22.65
	06/16/03	21.36	0.00	23.08
	09/30/03	21.65	0.00	22.79
	11/26/03	21.73	0.00	22.71
	03/02/04	21.61	0.00	22.83
	06/17/04	21.85	0.00	22.59
	09/17/04	22.03	0.00	22.41
	03/02/05	19.92	0.00	24.52
	09/01/05	20.72	0.00	23.72
	03/17/06	21.58	0.00	22.86
VW-2	11/07/02	24.27	0.00	20.81
44.55	02/18/03	18.28	0.00	26.27
	06/16/03	19.12	0.00	25.43
	09/30/03	20.14	0.00	24.41
	11/26/03	20.08	0.00	24.47
	03/02/04	18.96	0.00	25.59
	06/17/04	20.81	0.00	23.74
	09/17/04	21.52	0.00	23.03
	03/02/05	17.30	0.00	27.25
	09/01/05	19.71	0.00	24.84
	03/17/06	19.62	0.00	24.93
VW-3	11/07/02	17.59	0.00	22.09
41.16	02/18/03	18.58	0.00	22.58
	06/16/03	18.12	0.00	23.04
	09/30/03	18.37	0.00	22.79
	11/26/03	18.56	0.00	22.60
	03/02/04	18.40	0.00	22.76
	06/17/04	18.58	0.00	22.58
	09/17/04	18.76	0.00	22.40
	03/02/05	16.77	0.00	24.39
	09/01/05	17.55	0.00	23.61
	03/17/06	18.32	0.00	22.84

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2003 TO PRESENT
ARCO Facility #3037

Well ID/ Surveyed Well Elevation[1] (Feet MSL)	Date	Depth to Static Water (feet)	Apparent LPH Thickness (feet)	Groundwater Elevation[2] (feet MSL)
VW-4	11/07/02	22.07	0.00	22.14
44.27	02/18/03	21.59	0.00	22.68
	06/16/03	21.17	0.00	23.10
	09/30/03	21.45	0.00	22.82
	11/26/03	21.55	0.00	22.72
	03/02/04	21.40	0.00	22.87
	06/17/04	21.67	0.00	22.60
	09/17/04	21.81	0.00	22.46
	03/02/05	19.67	0.00	24.60
	09/01/05	20.70	0.00	23.57
	03/17/06	21.40	0.00	22.87
VW-5	11/07/02	22.23	0.00	22.16
44.32	02/18/03	21.55	0.00	22.77
	06/16/03	21.17	0.00	23.15
	09/30/03	21.41	0.00	22.91
	11/26/03	21.55	0.00	22.77
	03/02/04	21.42	0.00	22.90
	06/17/04	21.69	0.00	22.63
	09/17/04	21.83	0.00	22.49
	03/02/05	19.63	0.00	24.69
	09/01/05	20.51	0.00	23.81
	03/17/06	21.43	0.00	22.89

Notes:

[1] = Elevations are measured in feet above mean sea level (MSL)

[2] = Groundwater elevation in feet MSL = Surveyed well elevation - depth to water

[3] =Third-Party Owned well (City of San Diego)

[4] = Well inaccessible on 3/2/04, gauged on 3/3/04

LPH = Liquid Phase Hydrocarbons

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS, 2003 TO PRESENT
ARCO Facility #3037
All concentrations reported in micrograms per liter (µg/L)

Well Identification	Date	GRO	B	T	E	X	MTBE
City Well MW-2[a]	02/18/03	Well Not Sampled					
	06/16/03	Well Not Sampled					
	11/26/03	<500	<0.50	<0.50	18	<2.5	1.8
	03/03/04 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	03/03/04	<500	<0.50	<0.50	24.0	<1.5	1.3
	06/17/04	<500	<0.50	<0.50	<0.50	<1.5	2.0
	09/17/04	<500	<0.50	0.78	<0.50	<1.5	1.7
	03/02/05	<100	<0.50	<0.50	<0.50	<1.0	1.7
	09/01/05	<100	3.1	10	1.8	16	3.3
	03/17/06	<100	<1.0	<1.0	<1.0	<1.0	1.4
MW-1	02/18/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/16/03	<500	<0.50	<0.50	<0.50	<1.5	2.7
	09/30/03	<500	<0.50	<0.50	<0.50	<1.5	2.5
	11/26/03	<500	<0.50	<0.50	<0.50	<1.5	1.9
	03/02/04	<500	<0.50	<0.50	<0.50	<1.5	2.1
	06/17/04	<500	<0.50	<0.50	<0.50	<1.5	1.2
	09/17/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	03/02/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
	09/01/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
	03/17/06	<100	<1.0	<1.0	<1.0	<1.0	1.0
MW-2	02/18/03	1,600	200	55	200	310	27
	06/16/03	1,800	220	62	220	320	20
	09/30/03	1,500	180	51	210	280	15
	11/26/03	930	110	33	120	180	13
	03/02/04 NP	1,400	170	54	150	270	17
	03/02/04	1,200	140	46	140	240	16
	06/17/04	1,000	110	30	86	190	12
	09/17/04	770	88	26	56	150	11
	03/02/05	650	80	27	61	160	8.0
	09/01/05	560	55	29	53	160	4.4
	03/17/06	860	75	40	63	230	5.1
MW-3	02/18/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/16/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	09/30/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/26/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	03/02/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/17/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	09/17/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	03/02/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
	09/02/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
	03/30/06	<100	<1.0	<1.0	<1.0	<1.0	<1.0

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS, 2003 TO PRESENT
ARCO Facility #3037
All concentrations reported in micrograms per liter (µg/L)

Well Identification	Date	GRO	B	T	E	X	MTBE
MW-4	02/18/03	Well installed 03/18/03					
	06/16/03	<500	<0.50	<0.50	<0.50	<1.5	1.0
	09/30/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/26/03	Well Not Sampled - Car Parked Over Well					
	03/03/04	<500	<0.50	<0.50	<0.50	<1.5	1.1
	06/17/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	09/17/04	<500	<0.50	<0.50	<0.50	<1.5	1.0
	03/02/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
	09/01/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
	03/17/06	<100	<1.0	<1.0	<1.0	<1.0	<1.0
VW-1	02/18/03	11,000	1,800	660	600	950	240
	06/16/03	Not Sampled - LPH Sheen in well					
	09/30/03	Not Sampled - LPH Sheen in well					
	11/26/03	5,300	1,700	260	320	450	590
	03/02/04	Not Sampled - LPH Sheen in well during purging					
	06/17/04	Not Sampled - LPH Sheen in well during purging					
	09/17/04	Not Sampled - LPH Sheen in well during purging					
	03/02/05	Not Sampled - LPH Sheen in well during purging					
	09/01/05	5,600	1,300	1,200	510	1,900	39
	03/17/06	2,200	620	190	140	390	22
VW-2	02/18/03	<500	<0.50	<0.50	<0.50	<1.5	1.8
	06/16/03	<500	<0.50	<0.50	<0.50	<1.5	1.7
	09/30/03	<500	<0.50	<0.50	<0.50	<1.5	1.1
	11/26/03	Not Sampled - Insufficient Recharge					
	03/02/04	Not Sampled - Obstruction in well					
	06/17/04	Not Sampled - Obstruction in well					
	09/17/04	Not Sampled - Obstruction in well					
	03/02/05	Not Sampled - Obstruction in well					
	09/01/05	<100	<0.50	<0.50	<0.50	<1.0	1.6
	03/17/06	Not Sampled - Obstruction in well					
VW-3	02/18/03	770	150	48	22	82	210
	06/16/03	620	160	33	17	61	82
	09/30/03	570	190	32	18	58	97
	11/26/03	580	160	33	19	64	96
	03/02/04 NP	<500	51	14	7.5	27	47
	03/02/04	<500	75	21	12	42	50
	06/17/04	<500	95	27	16	54	44
	09/17/04	<500	83	21	13	43	32
	03/02/05	400	110	26	22	71	37
	09/01/05	160	47	13	11	36	28
	03/17/06	130	38	11	11	39	13

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS, 2003 TO PRESENT
ARCO Facility #3037
All concentrations reported in micrograms per liter (µg/L)

Well Identification	Date	GRO	B	T	E	X	MTBE
VW-4	02/18/03	2,100	79	170	77	560	1,200
	06/16/03	2,400	78	310	140	590	1,400
	09/30/03	1,300	67	170	95	350	2,400
	11/26/03	830	55	110	66	230	3,900
	03/02/04 NP	740	40	<5.0	<5.0	<15	1,100
	03/02/04	720	70	98	67	200	3,200
	06/17/04	500	43	56	40	120	1,100
	09/17/04	<500	32	42	31	98	130
	03/02/05	2,300	84	260	120	710	20
	09/01/05	500	17	49	35	150	<2.0
	03/17/06	380	19	38	31	110	1.9
VW-5	02/18/03	<500	8.5	<5.0	14	<15	1,700
	06/16/03	<500	5.4	<5.0	13	<15	1,600
	09/30/03	<500	<10	<10	16	<30	1,700
	11/26/03	<500	5.7	<5.0	17	<15	1,700
	03/02/04	<500	<5.0	<5.0	12	<15	1,600
	06/17/04	<500	<5.0	<5.0	14	<15	1,400
	09/17/04	<500	<5.0	10	9.6	<15	1,100
	03/02/05	<100	0.63	<0.50	2.4	<1.0	69
	09/01/05	<100	<0.50	<0.50	0.64	<1.0	90
	03/17/06	<100	<1.0	<1.0	<1.0	<1.0	81

Notes:

TPH = Total Petroleum Hydrocarbons (by EPA Method 8015M)
B = Benzene (by EPA Method 8260B)
T = Toluene (by EPA Method 8260B)
E = Ethylbenzene (by EPA Method 8260B)
X = Total Xylenes (by EPA Method 8260B)
MTBE = Methyl tert-butyl ether (by EPA Method 8260B)
< = Less than the indicated laboratory reporting limit
NP = Sample collected by no-purge sampling procedures
[a] = Third-Party owned well (City of San Diego)

TABLE 3
SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2003 TO PRESENT
ARCO Facility #3037
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Date	TBA	DIPE	ETBE	TAME	ETHANOL
City Well MW-2[a]	11/26/03	<50	<5.0	<5.0	<5.0	<150
	03/03/04 NP	<50	<5.0	<5.0	<5.0	<150
	03/03/04	<50	<5.0	<5.0	<5.0	<150
	06/17/04	<50	<5.0	<5.0	<5.0	<150
	09/17/04	<50	<5.0	<5.0	<5.0	<150
	03/02/05	<25	<2.0	<2.0	<2.0	<500
	09/01/05	<25	<2.0	<2.0	<2.0	<500
	03/17/06	<25	<2.0	<2.0	<2.0	<500
MW-1	02/18/03	<50	<5.0	<5.0	<5.0	<150
	06/16/03	<50	<5.0	<5.0	<5.0	<150
	09/30/03	<50	<5.0	<5.0	<5.0	<150
	11/26/03	<50	<5.0	<5.0	<5.0	<150
	03/02/04	<50	<5.0	<5.0	<5.0	<150
	06/17/04	<50	<5.0	<5.0	<5.0	<150
	09/17/04	<50	<5.0	<5.0	<5.0	<150
	03/02/05	<25	<2.0	<2.0	<2.0	<500
	09/01/05	<25	<2.0	<2.0	<2.0	<500
	03/17/06	<25	<2.0	<2.0	<2.0	<500
MW-2	02/18/03	<200	<20	<20	<20	<600
	06/16/03	<200	<20	<20	<20	<600
	09/30/03	<200	<20	<20	<20	<600
	11/26/03	<50	<5.0	<5.0	<5.0	<150
	03/02/04 NP	<50	<5.0	<5.0	<5.0	<150
	03/02/04	<100	<10	<10	<10	<300
	06/17/04	<100	<10	<10	<10	<300
	09/17/04	<50	<5.0	<5.0	<5.0	<150
	03/02/05	<25	<2.0	<2.0	<2.0	<500
	09/01/05	<25	<2.0	<2.0	<2.0	<500
	03/17/06	<25	<2.0	<2.0	<2.0	<500
MW-3	02/18/03	<50	<5.0	<5.0	<5.0	<150
	06/16/03	<50	<5.0	<5.0	<5.0	<150
	09/30/03	<50	<5.0	<5.0	<5.0	<150
	11/26/03	<50	<5.0	<5.0	<5.0	<1.0
	03/02/04	<50	<5.0	<5.0	<5.0	<150
	06/17/04	<50	<5.0	<5.0	<5.0	<150
	09/17/04	<50	<5.0	<5.0	<5.0	<150
	03/02/05	<25	<2.0	<2.0	<2.0	<500
	09/02/05	<25	<2.0	<2.0	<2.0	<500
	03/30/06	<25	<2.0	<2.0	<2.0	<500

TABLE 3
SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2003 TO PRESENT
ARCO Facility #3037
All Results Reported in Micrograms per Liter (µg/L)

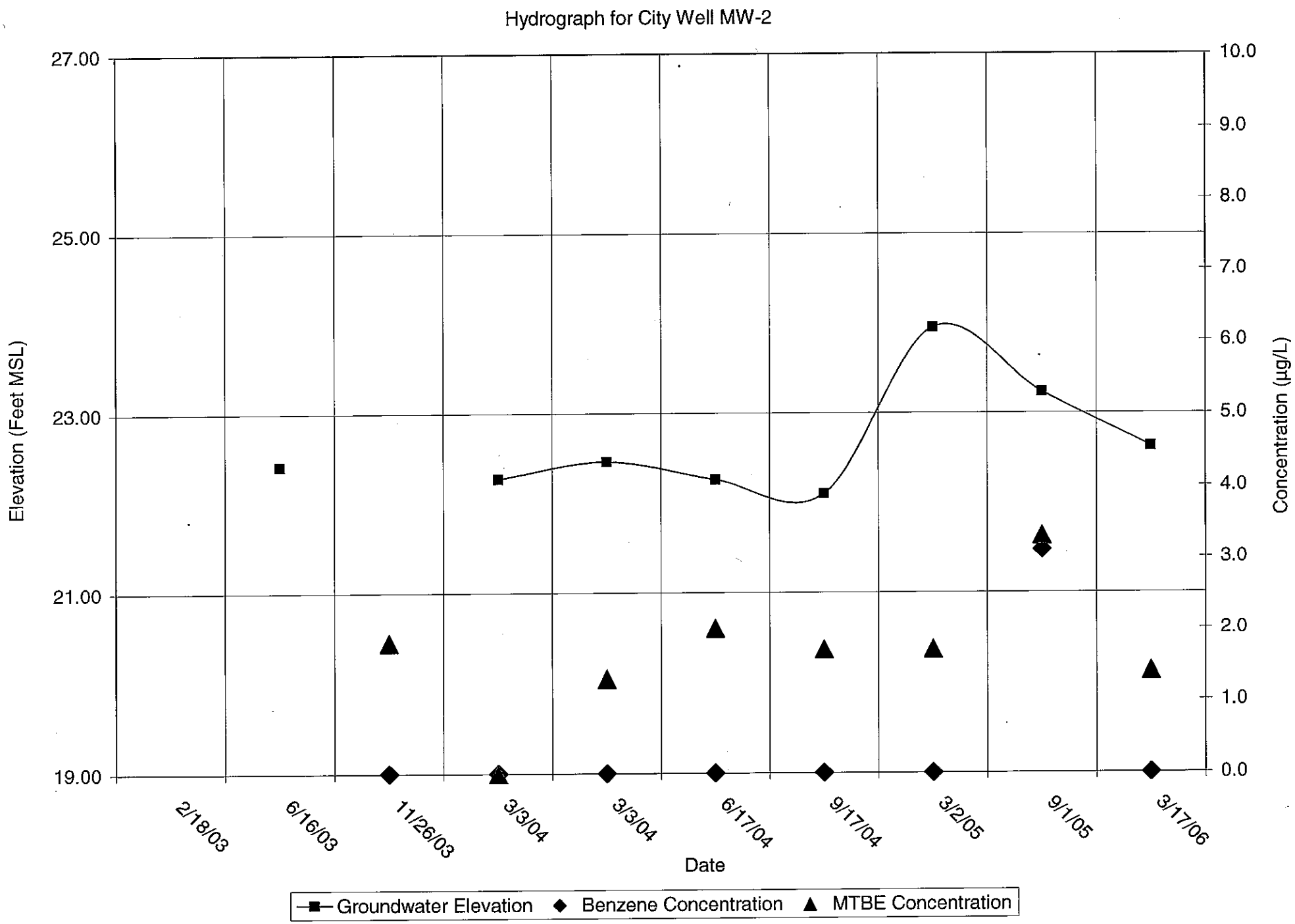
Well Identification	Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-4	06/16/03	<50	<5.0	<5.0	<5.0	<150
	09/30/03	<50	<5.0	<5.0	<5.0	<150
	11/26/03	Not Sampled - Car Parked Over Well				
	03/03/04	<50	<5.0	<5.0	<5.0	<150
	06/17/04	<50	<5.0	<5.0	<5.0	<150
	09/17/04	<50	<5.0	<5.0	<5.0	<150
	03/02/05	<25	<2.0	<2.0	<2.0	<500
	09/01/05	<25	<2.0	<2.0	<2.0	<500
	03/17/06	<25	<2.0	<2.0	<2.0	<500
VW-1	02/18/03	<1,000	<100	<100	<100	<3,000
	06/16/03	Not Sampled - Sheen in well				
	09/30/03	Not Sampled - Sheen in well				
	11/26/03	1,500	<120	<120	<120	<3,800
	03/02/04	Not Sampled - Sheen in well				
	06/17/04	Not Sampled - Sheen in well				
	09/17/04	Not Sampled - Sheen in well				
	03/02/05	Not Sampled - Sheen in well				
	09/01/05	1,600	<33	<33	<33	<8,300
	03/17/06	2,300	<14	<14	<14	<3,600
VW-2	02/18/03	<50	<5.0	<5.0	<5.0	<150
	06/16/03	<50	<5.0	<5.0	<5.0	<150
	09/30/03	<50	<5.0	<5.0	<5.0	<150
	11/26/03	Not Sampled - Insufficient Recharge				
	03/02/04	Not Sampled - Obstruction in well				
	06/17/04	Not Sampled - Obstruction in well				
	09/17/04	Not Sampled - Obstruction in well				
	03/02/05	Not Sampled - Obstruction in well				
	09/01/05	<25	<2.0	<2.0	<2.0	<500
	03/17/06	Not Sampled - Obstruction in well				
VW-3	02/18/03	470	<12	<12	<12	<380
	06/16/03	600	<10	<10	<10	<300
	09/30/03	480	<12	<12	<12	<380
	11/26/03	430	<10	<10	<10	<300
	03/02/04 NP	290	<5.0	<5.0	<5.0	<150
	03/02/04	290	<5.0	<5.0	<5.0	<150
	06/17/04	250	<5.0	<5.0	<5.0	<150
	09/17/04	180	<12	<12	<12	<380
	03/02/05	<50	<4.0	<4.0	<4.0	<1,000
	09/01/05	84	<2.0	<2.0	<2.0	<500
	03/17/06	100	<2.0	<2.0	<2.0	<500

TABLE 3
SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2003 TO PRESENT
ARCO Facility #3037
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Date	TBA	DIPE	ETBE	TAME	ETHANOL
VW-4	02/18/03	<500	<50	<50	<50	<1,500
	06/16/03	<500	<50	<50	<50	<1,500
	09/30/03	<1,000	<100	<100	<100	<3,000
	11/26/03	<1,200	<120	<120	<120	<3,800
	03/02/04 NP	<500	<50	<50	<50	<1,500
	03/02/04	1,600	<120	<120	<120	<3,800
	06/17/04	3,500	<50	<50	<50	<1,500
	09/17/04	4,700	<50	<50	<50	<1,500
	03/02/05	1,100	<10	<10	<10	<2,500
	09/01/05	1,700	<4.0	<4.0	<4.0	<1,000
	03/17/06	740	<2.0	<2.0	<2.0	<500
VW-5	02/18/03	<500	<50	<50	<50	<1,500
	06/16/03	<500	<50	<50	<50	<1,500
	09/30/03	<1,000	<100	<100	<100	<3,000
	11/26/03	<500	<50	<50	<50	<1,500
	03/02/04	<500	<50	<50	<50	<1,500
	06/17/04	<500	<50	<50	<50	<1,500
	09/17/04	<500	<50	<50	<50	<1,500
	03/02/05	<25	<2.0	<2.0	<2.0	<500
	09/01/05	30	<2.0	<2.0	<2.0	<500
	03/17/06	28	<2.0	<2.0	<2.0	<500

Notes:

DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TAME = tert-Amyl methyl ether
TBA = tert-Butanol
< = Less than the laboratory reporting limit shown.
Samples analyzed by EPA Method 8260B.
NP = Sample collected by no-purge sampling procedures
a =Third-Party owned well (City of San Diego)



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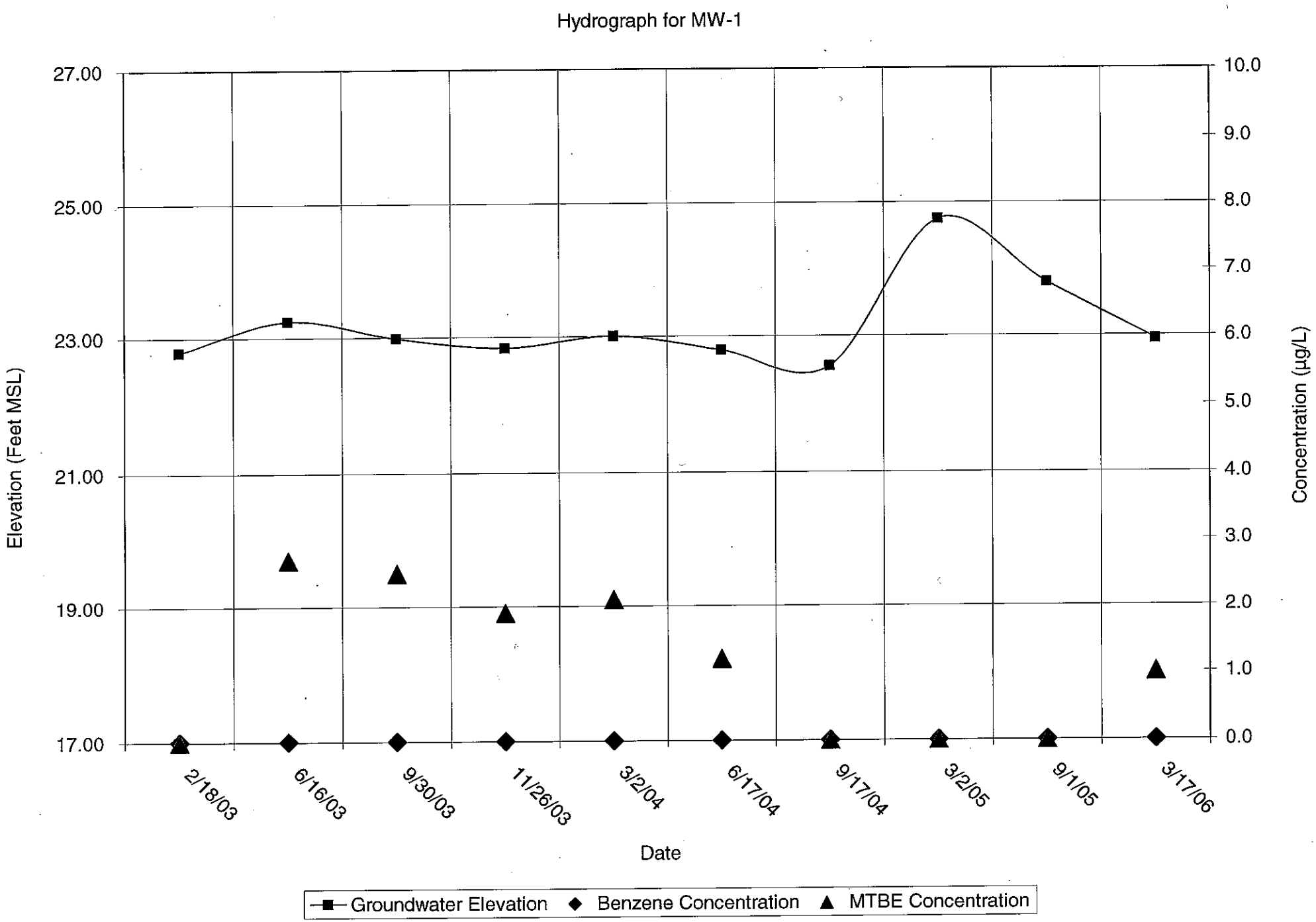

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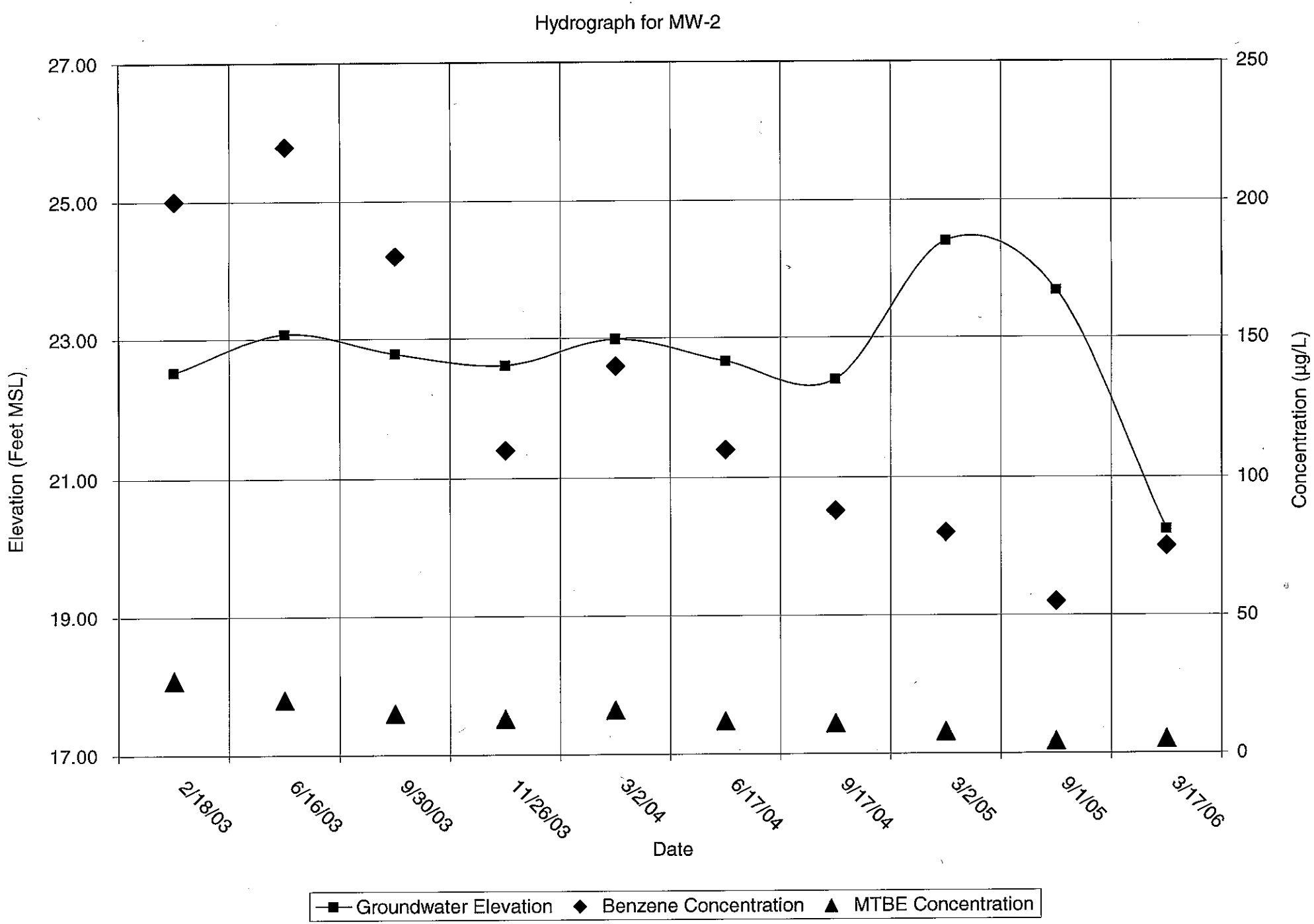

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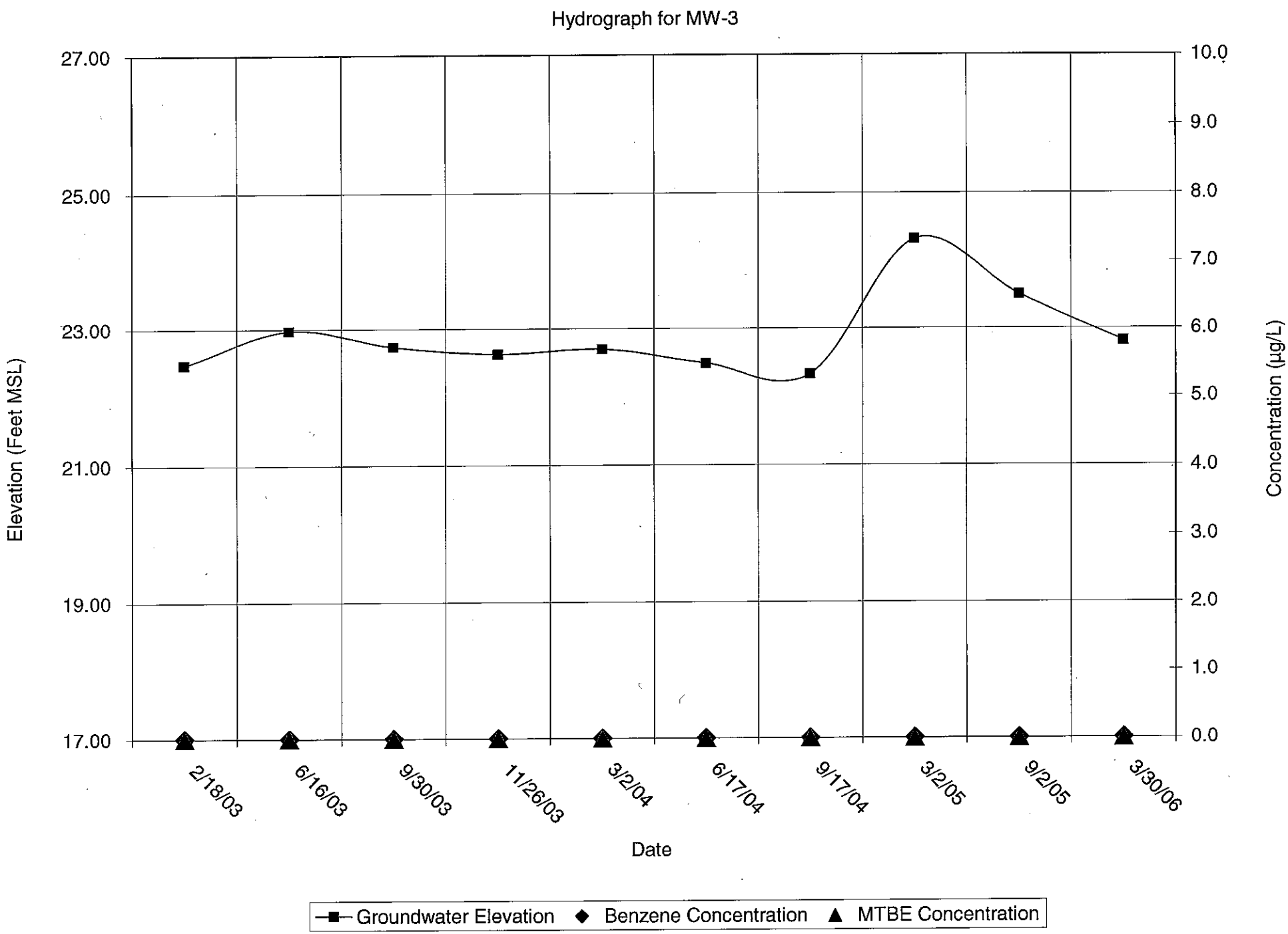

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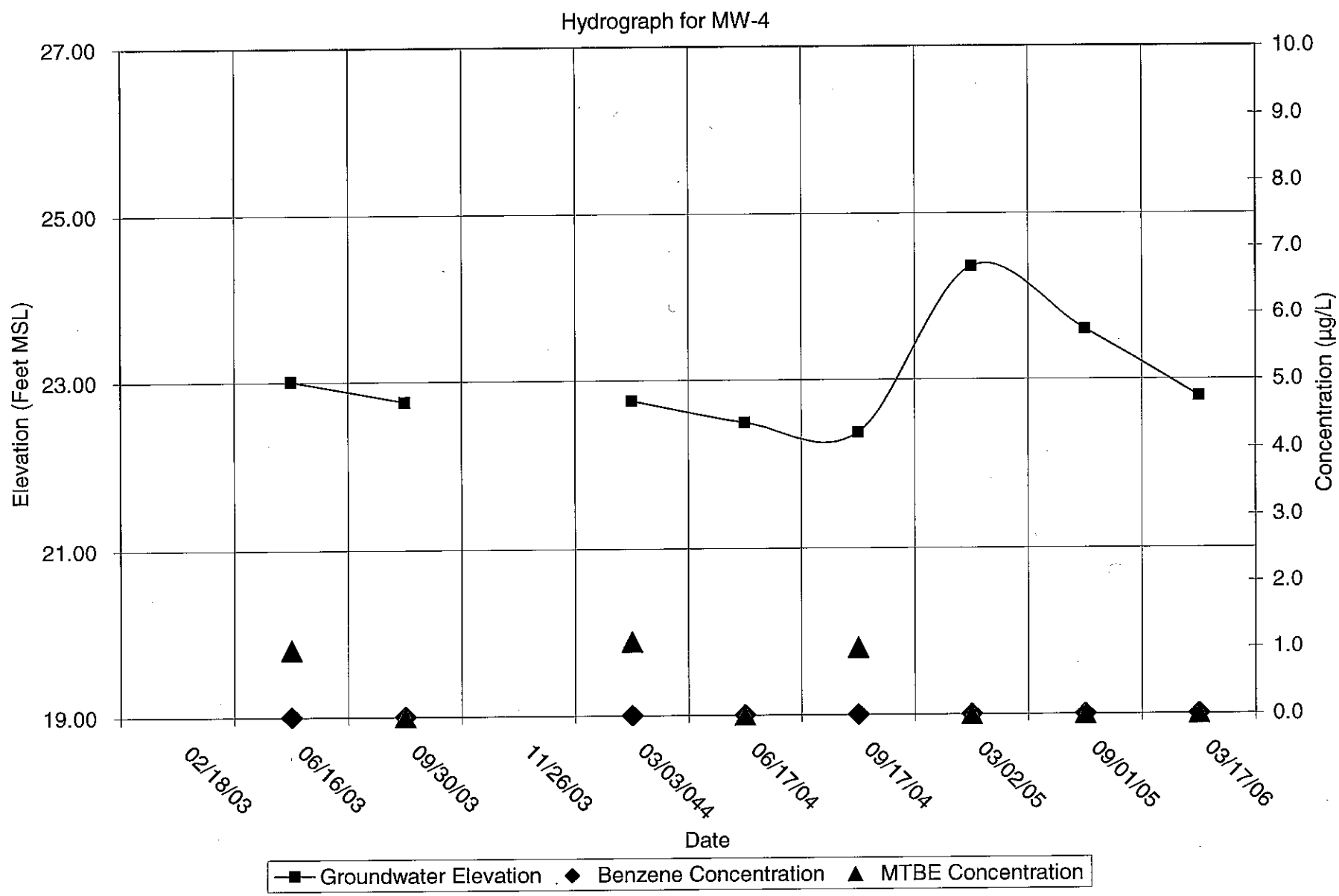

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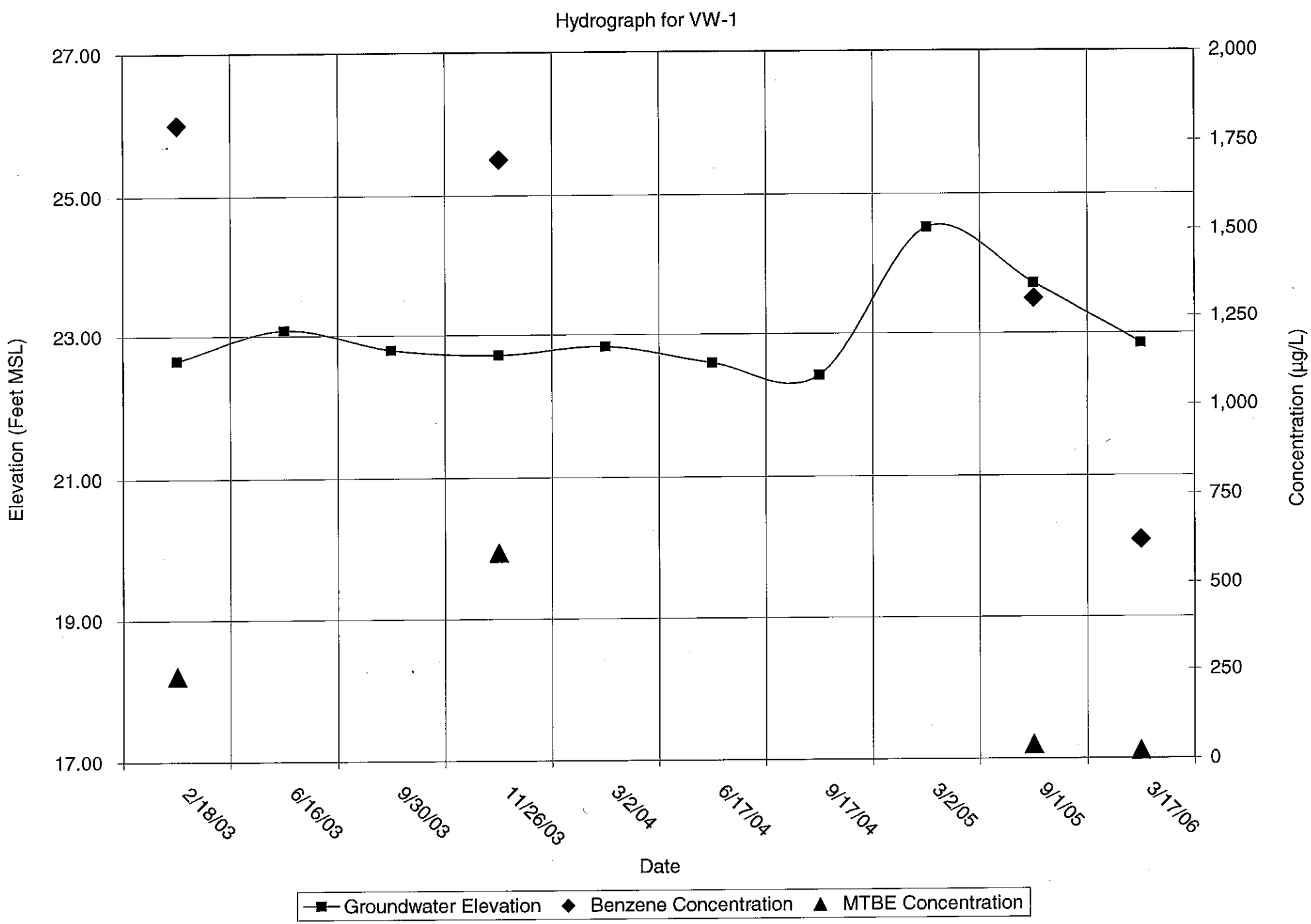

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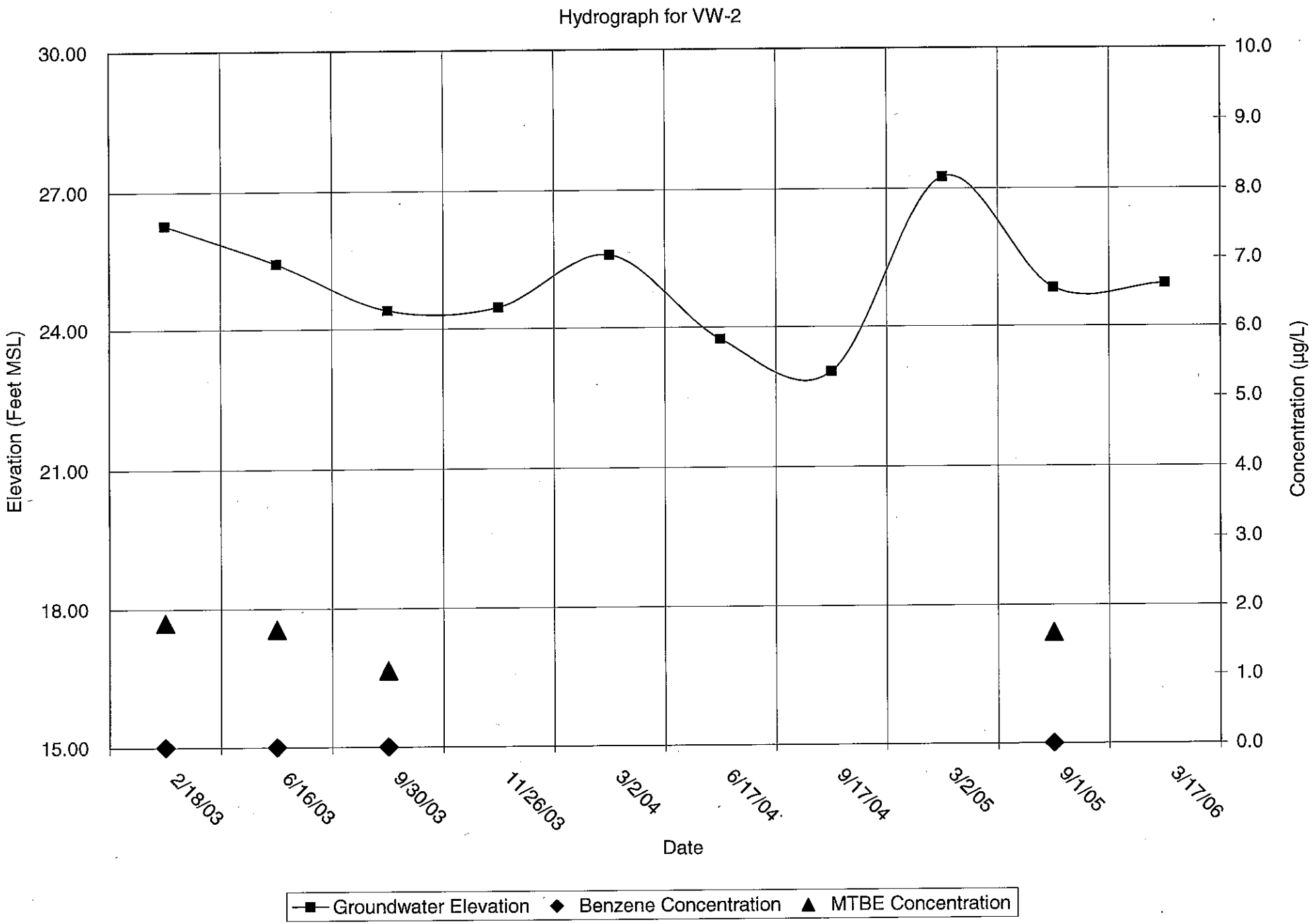

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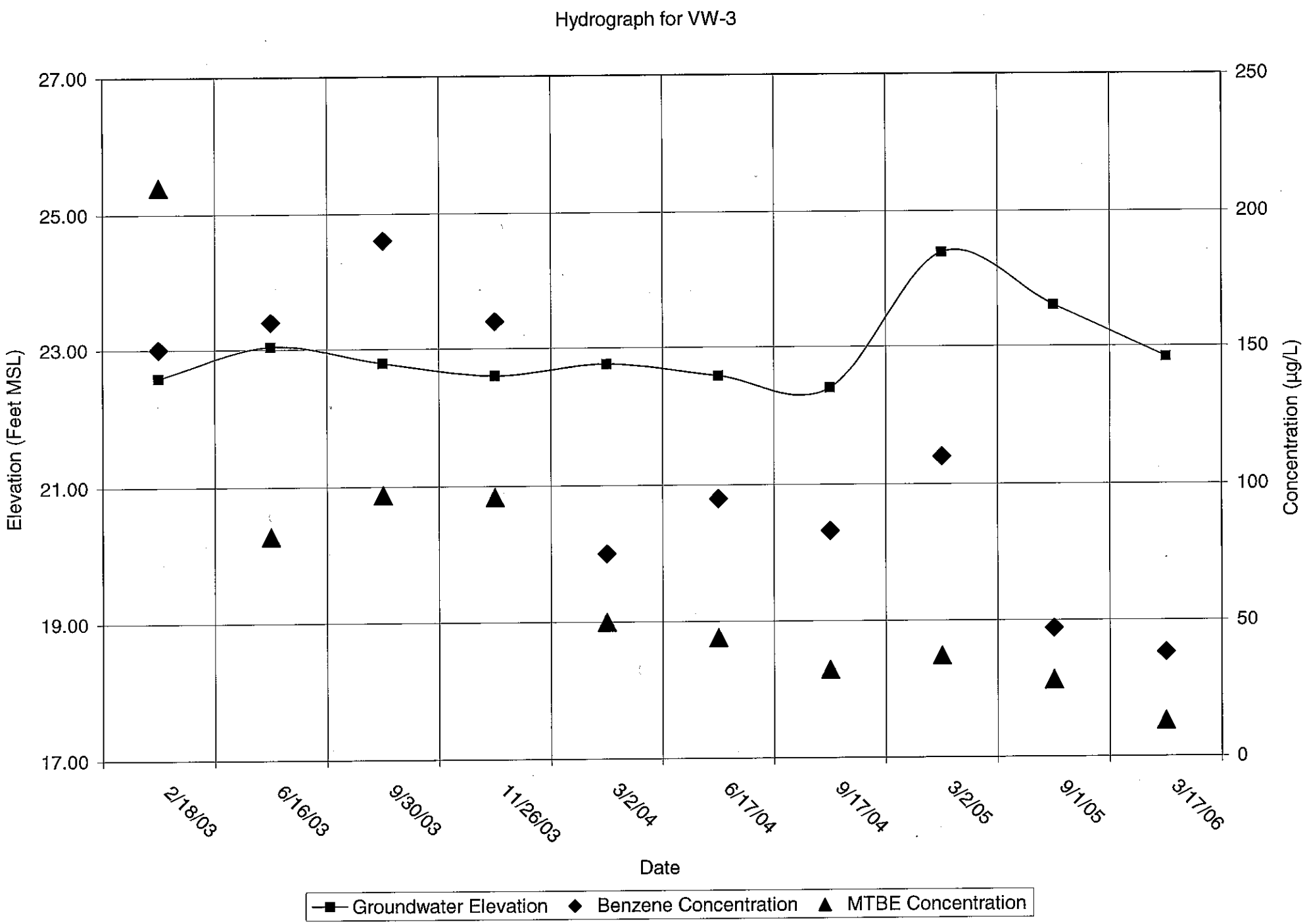

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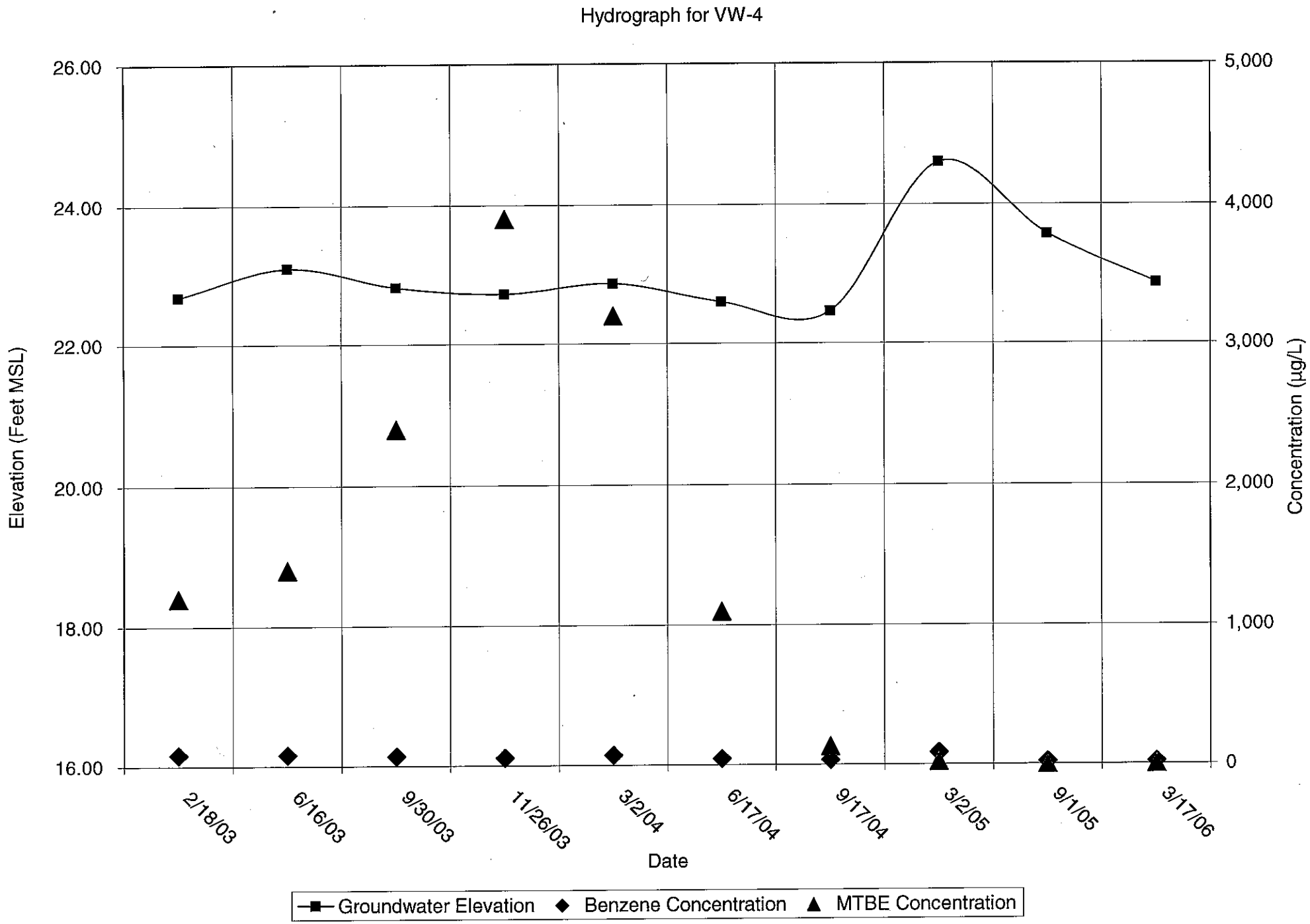

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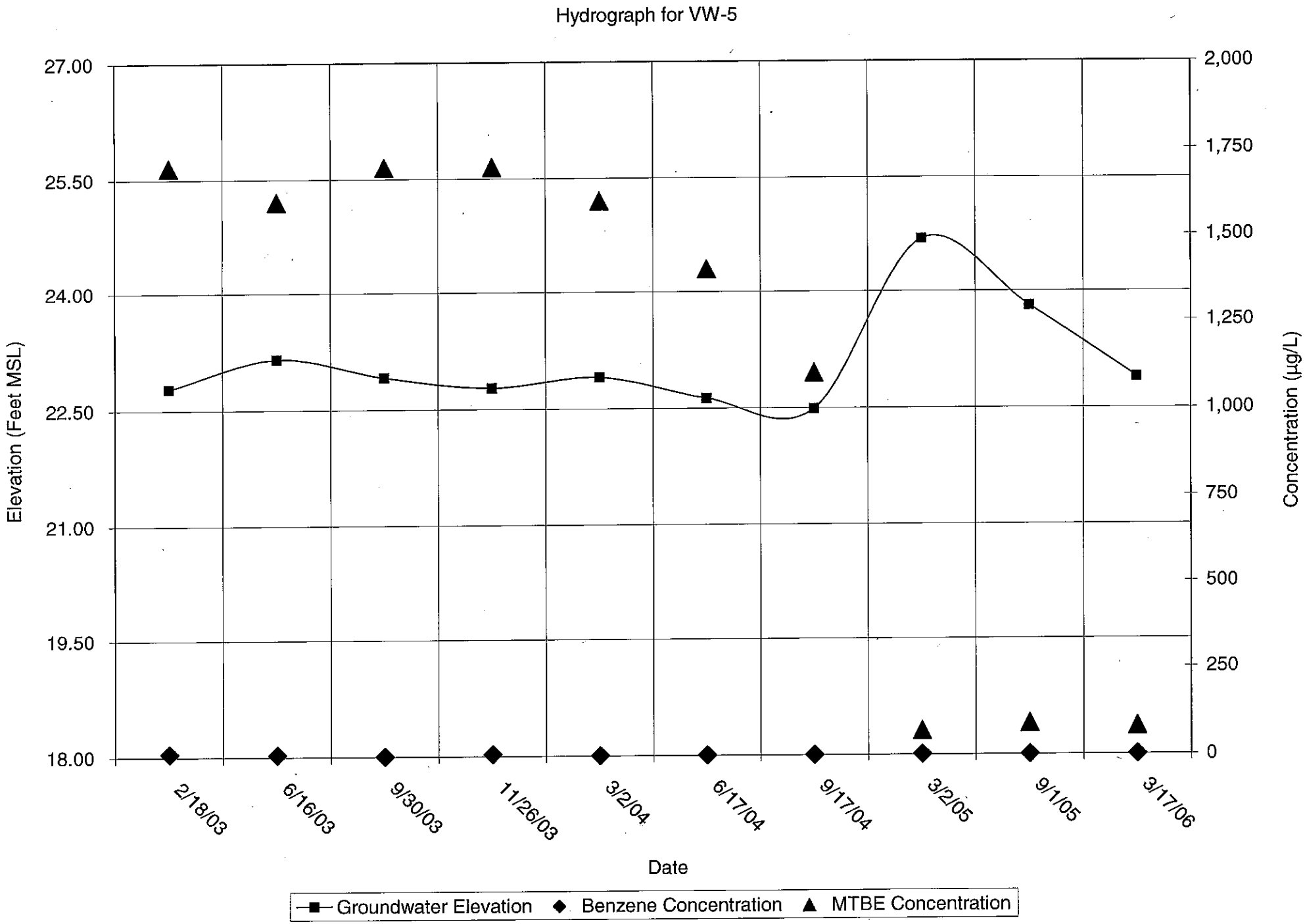

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Fast recovering well: A well is considered to be fast recovering if recovery to 80 percent or more of its static condition occurs within 2 hours when using the high-flow purging method.

Slow recovering well: A well is considered to be slow recovering if recovery to 80 percent of its static water level takes longer than 2 hours when using the high-flow purging and sampling method.

Purging and Sampling Methods: The following method is currently approved by SAM.

High-flow Purging and Sampling: Purging using a pumping rate greater than 1 liter per minute (lpm) or 0.26 gallon per minute (gpm) (Barcelona and Puls, 1996). Traditionally, the high-flow purging method has been widely used. This method typically involves the removal of up to 3 borehole volumes prior to sampling. Samples are most often collected with a bailer or other device after completion of purging. This methodology provides a composite of the contaminant concentration within the well and will likely not be suitable for low yield wells.

1. High-flow Purging and Sampling Method

This method is widely used and involves the removal of water from the well at a rate in excess of 1 lpm (0.26 gpm) by a variety of methods, including pumps, bailers, etc. The following steps are necessary to collect representative samples. Well purging to "dryness" should be avoided.

a. Measure for NAPL

LNAPL and DNAPL may be present in groundwater monitoring wells. If NAPL exists, the well sampling procedure described in this section will typically not apply. Special considerations may be necessary and should be discussed with the SAM project manager on a case-by-case basis.

b. Measure Water Level

The groundwater level in the monitoring well should be measured to an accuracy of 0.01 foot prior to purging and sampling activities.

c. Placement of Pump

The pump should be placed in the lower one-third of the well screen.

d. Calculation of Borehole Volume

f. Parameter Stability

It is assumed that parameter stability is achieved when the difference between successive measurements is less than 10 percent. Generally, measurements are made after one borehole volume is removed and then at one-half borehole volume intervals. Commonly, the measurement of temperature, specific conductance, and pH are used exclusively, but it has been found these parameters are less sensitive to field conditions. It is recommended that dissolved oxygen, turbidity, specific conductance, and temperature be monitored.

g. Purge Well

The well must be purged with a device that does not compromise the sample by cross-contamination, aeration, or other negative effects

(1) Fast Recovering Wells

DEH considers the following two options acceptable methods for properly purging fast recovering wells:

(a) Option I
   i. Remove 3 borehole volumes of water.
   ii. Allow the well to recover to 80% of its static condition prior to collecting the sample.

(b) Option II
   i. Remove 1 borehole volume of water.
   ii. Conduct field water-quality measurements (dissolved oxygen, turbidity, specific conductance, and temperature).
   iii. Remove an additional ½ borehole volume of water. Conduct field water quality measurements again. If the first and second measurements vary by less than 10%, purging is considered adequate. Proceed to step (v.) below.
   iv. Repeat step (iii) until the measurements vary by less than 10% or until 3 borehole volumes of water have been removed.
   v. Allow the well to recover to 80% of its static condition before collecting the sample.

(2) Slow Recovering Wells

(a) Remove 1 borehole volume of water.

(b) The well should be allowed to recover for 2 hours after purging has stopped. Then the well should be sampled as soon after 2 hours as possible. Note that if the well recovers to greater than 80% in less than 2 hours, it is a fast recovering well. If so, follow the steps in Option I or II above.

h. Collect Samples

After the monitoring well has been properly purged, the guidelines below for groundwater sample collection should be followed.

(1) In the case of a fast recovering well, samples should be collected when the well has recovered to 80%. In the case of a slow recovering well, samples should be collected as soon as possible after 2 hours have elapsed.

(2) Collect groundwater samples from wells with sampling equipment.

Sampling equipment must be compatible with the contaminant being analyzed

(3) Sampling equipment should be decontaminated before use.

(4) Samples requiring organic analyses should not be filtered.

(5) Samples should be transferred from the sampling device to a container in a manner that minimizes aeration.

(6) Samples should be collected in approved sample containers appropriate for the type of analysis to be performed.

(7) Samples should not be transferred from one sample container to another.

(8) Headspace in sample containers should be avoided.

(9) EPA SW-846 sample preservation and holding times for specific analyses should be followed.

Appropriate sample chain-of-custody procedures must be followed.

SECOR

MONITORING WELL GAUGING LOG

Site Name & Facility No: ARCO 3037

Date: Mar. 17, '06 mil

Project Number: 08BP.U3037.06 / 4142

Field Representative(s): JM, AF, DK

Checked by: Mel K Kem

Well No.	Previous QTR DTW	Gauging Time	Depth to Floating Product	Depth to Water (ft)	Floating Product Thickness	Total Casing Depth (ft)	Casing Elevation[1]	Groundwater Elevation[1]	Corrected Groundwater Elevation[1*]	Comments
MW-1	22.16	0922		23.00		34.87	45.95	22.95		
MW-2	18.70	0915	–	22.14	–	34.40	42.38	20.24		
MW-3	18.36	–	–	NM	–	34.49	41.86	NM		Not gauged on March 17, '06. Sampled on March 30, '06
MW-4	17.65	0908	–	18.44	–	30.21	41.24	22.80		
VW-1	20.72	0926	–	21.58	–	23.86	44.44	22.86		Sheen Observed
VW-2	19.71	0926	-	19.62	–	28.47	44.55	24.93		
VW-3	17.55	0934	–	18.32	–	24.19	41.16	22.84		
VW-4	20.70	0921	-	21.40	-	33.60	44.27	22.87		
VW-5	20.51	0917	-	21.43	-	27.70	44.32	22.89		
City Well (MW-2)	12.52	0959	–	13.12 mil	–	18.81	35.75	22.63		

Notes:
1 = feet above mean sea level unless noted otherwise
* = elevation adjusted by adding (.75 x product thickness) to measured water elevation
\- = not measured due to the presence of liquid-phase hydrocarbons

Sheen = discontinuous, non-measurable thickness of LPH
Trace = continuous, non-measurable thickness of LPH
ND = Not detected
NM = Not measured

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:	CITYWELL (MW-2)
Project Name:	ARCO 3037
Date:	3/17/6
Project Number:	08BP.U3037.06 / 4142
Sample Time:	1427
SECOR Rep: DK	Checked by:
Sample No:	CITYWELL (MW-2)

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 21

Purging Equipment / Method: ___ Vac Truck ___ Bailer, X Submersible Pump ___ Other

pH Temp/Conductivity Meter Type / ID: 10

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 10 12

Casing Diameter (in): 2 4

Depth to Water (DTW_1) (ft): 13.12 @ 9:59

Total Well Depth (DTB) (ft): 27.70

Water Column: 14.58

Floating Product:

Thickness (in):

Borehole Volume (gal): 11.22 ✓

1.5 Borehole Volumes (gal): 16.83 ✓ (16.84)

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1004	Started Purging					
1130	DRY	4.58	7.01	22.6	3.49	BRN, CLOUDY, ODORLESS
1227	DRY	AT 11.5	7.06	23.0	357	" "
1427	17.45	SAMP				

Maximum Drawdown (DTW_2) (ft) = 27.70

H_2O Removal Rate (GPM) =

___ Fast Recharging Well

X Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1427

Depth to Water at time of sampling (DTW_3): 17.45

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
6 x 40ml VOAs	N	HCL & ICE or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(13.12) - (17.45)}{(13.12) - (27.70)} = \frac{-4.33}{-14.58}$$

$$= 70\% \checkmark$$

80% Recharge = 16.03

Notes: Hist. Slow

~~*CALLED PLANT TO SEE IF I COULD STOP PURGING BEFORE 11 GAL — OK'D~~

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 1
	Project Name: ARCO 3037		Date: 3/17/06
	Project Number: 08BP.U3037.06 / 4142		Sample Time: 1229
	SECOR Rep: J. Morelli	Checked by: MD	Sample No: MW- 1

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS
Water Level Meter Type & ID: Solinist # 200	Borehole Diameter (in): 8 (10) 12
Purging Equipment / Method: ___ Vac Truck ___ Bailer X Submersible Pump ___ Other	Casing Diameter (in): 2 (4)
pH Temp/Conductivity Meter Type / ID: 3A	Depth to Water (DTW_1) (ft): 23.05
Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:	Total Well Depth (DTB) (ft): 34.87 / Water Column: 11.82
	Floating Product: No / Thickness (in): N/A
Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:	Borehole Volume (gal): 17.73 ✓ / 1.5 Borehole Volumes (gal): 26.60 ✓

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1012	Started Purging					
1021	30.20	18.00	7.34 ✓	22.1 ✓	1605 ✓	Brown, odorless, cloudy
1029	29.56	27.00 ✓	7.35	22.3	1620	"
1229	24.00 ✓	Sample				

Maximum Drawdown (DTW_2) (ft) = 30.20

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:

Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(23.05)-(24.00)}{(23.05)-(30.20)} = \frac{.95}{7.15} = 87\ \%$$

80% Recharge = 24.48

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name:	ARCO 3037	Well No:	MW- 2
Project Number:	08BP.U3037.06 / 4142	Date:	3/17/06
SECOR Rep: ACF	Checked by: MY	Sample Time:	1113
		Sample No:	MW- 2

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Heron Solinist # Blue Rental

Purging Equipment / Method: ___ Vac Truck X Bailer ___ Submersible Pump ___ Other

pH Temp/Conductivity Meter Type / ID: 9

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 (10) 12

Casing Diameter (in): 2 (4)

Depth to Water (DTW_1) (ft): 22.16

Total Well Depth (DTB) (ft): 34.40

Water Column: ~~27.16~~ 12.24

Floating Product: NP

Thickness (in): NP

Borehole Volume (gal): 18.36

1.5 Borehole Volumes (gal): 27.54

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1039	Started Purging					
1046	24.34	18.50	7.44	23.1	1363	Slight odor / high / Black
1052	27.12	27.00	7.52	22.8	1341	"
1113	23.15	SAMPLE				

Maximum Drawdown (DTW_2) (ft) = 27.12

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1113

Depth to Water at time of sampling (DTW_3): 23.15

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(22.16)-(23.15)}{(22.16)-(27.12)} = \frac{-.99}{-4.96} = 80\ \%$$

80% Recharge = 23.15

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:	MW- 3
Project Name	ARCO 3037
Date:	3/30/6
Project Number:	08BP.U3037.06 / 4142
Sample Time:	1027
SECOR Rep:	IC / RK
Checked by:	Kem
Sample No:	MW- 3

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 6

Purging Equipment / Method: ___ Vac Truck ___ Submersible Pump X Bailer ___ Other

pH Temp/Conductivity Meter Type / ID: 6

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 (10) 12

Casing Diameter (in): 2 (4)

Depth to Water (DTW_1) (ft): 19.05

Total Well Depth (DTB) (ft): 34.49

Water Column: 15.44

Floating Product: —

Thickness (in): —

Borehole Volume (gal): 23.16

1.5 Borehole Volumes (gal): 34.74

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
0940	Started Purging					
0955	28.49	23.5	7.52	22.0	2.65	clear, low silt, no odor
0959	33.04	35	7.45	22.0	2.64	
1027	21.80	sample				

Maximum Drawdown (DTW_2) (ft) = 33.04

H_2O Removal Rate (GPM) = 3.18

✓ Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1027

Depth to Water at time of sampling (DTW_3): 21.80

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(19.05)-(21.80)}{(19.05)-(33.04)} = \frac{-2.75}{-14.01}$$

$$= 80\ \%$$

80% Recharge = 21.85

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 4
	Project Name: ARCO 3037		Date: 3-17-06
	Project Number: 08BP.U3037.06 / 4142		Sample Time: 1017
	SECOR Rep: MP	Checked by: MD	Sample No: MW- 4

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS
Water Level Meter Type & ID: Solinist # 0227	Borehole Diameter (in): 8 (10) 12
Purging Equipment / Method: __ Vac Truck __ Bailer X Submersible Pump __ Other	Casing Diameter (in): 2 (4)
pH Temp/Conductivity Meter Type / ID: 6	Depth to Water (DTW_1) (ft): 18.44
Sampling Method: ____ Teflon Bailer X Disposable Bailer ____ Other:	Total Well Depth (DTB) (ft): 30.21 / Water Column: 11.77
	Floating Product: / Thickness (in):
Decontamination Method: __ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) Other:	Borehole Volume (gal): 17.66 / 1.5 Borehole Volumes (gal): 26.48

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
0959	Started Purging					
1010	19.60	18	7.25	23.5	1544	light brown, med turb. slight odor
1015	19.74	26.5	7.25	23.5	1542	"
1017	18.70	sample				

Maximum Drawdown (DTW_2) (ft) = 19.74

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1017

Depth to Water at time of sampling (DTW_3): 18.70

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(18.44) - (18.70)}{(18.44) - (19.74)} = \frac{-0.26}{-1.3}$$

$$= 80 \%$$

80% Recharge = 18.70

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: VW- 1
	Project Name: ARCO 3037		Date: 3/17/06
	Project Number: 08BP.U3037.06 / 4142		Sample Time: ~~1113~~ 1050
	SECOR Rep: ACF	Checked by: CWZ	Sample No: VW- 1

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS
Water Level Meter Type & ID: Heron Solinist # Blue Banded	Borehole Diameter (in): 8 (10) 12
Purging Equipment / Method: ___ Vac Truck ___ Submersible Pump X Bailer ___ Other	Casing Diameter (in): 2 (4)
pH Temp/Conductivity Meter Type / ID: 9	Depth to Water (DTW_1) (ft): 21.62
Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:	Total Well Depth (DTB) (ft): 23.86 / Water Column: 2.24
Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:	Floating Product: NP / Thickness (in): N/A
	Borehole Volume (gal): 3.36 / 1.5 Borehole Volumes (gal): 5.04

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1002	Started Purging					
1010	DRY	3.50	7.45	22.0	1590	Petrol odor / high / black
1021	DRY	5.50	7.47	21.8	1552	"
~~1113~~ (DIL)	~~21.62~~ DRY	SAMPLE				
1050	21.62					

Maximum Drawdown (DTW_2) (ft) = 23.86

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: ~~1113~~ (DIL)

Depth to Water at time of sampling (DTW_3): 22.01

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes: H. Shearn

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(21.62) - (\cancel{22.01}\ 21.62)}{(21.62) - (23.86)} = \frac{0}{-2.24} = 100\%$$

80% Recharge = 22.07

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:	VW- 2
Project Name:	ARCO 3037
Date:	3/17/6
Project Number:	08BP.U3037.06 / 4142
Sample Time:	1432
SECOR Rep:	DK
Checked by:	MNA
Sample No:	VW- 2

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 21

Purging Equipment / Method: ___ Vac Truck ___ Submersible Pump X Bailer ___ Other

pH Temp/Conductivity Meter Type / ID: O

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 (10) 12

Casing Diameter (in): 2 (4)

Depth to Water (DTW_1) (ft): 19.70 @ 1215

Total Well Depth (DTB) (ft): 21.44 ~~28.47~~ → Water Column: 1.74 ✓

Floating Product: Thickness (in):

Borehole Volume (gal): 2.61 ✓ 1.5 Borehole Volumes (gal): 3.91 ✓

PURGING INFORMATION

Time	DTW (ft),	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1224	Started Purging					
1225	DRY	~~3~~ 2 ✓	7.17 ✓	22.9 ✓	1194 ✓	BRN, CLOUDY, ODORLESS
1232	DRY	~~4~~ 3 ✓	7.21 ✓	23.0	1194	" "
1432	20.90	SAMP				

Maximum Drawdown (DTW_2) (ft) = 21.44

H_2O Removal Rate (GPM) =

___ Fast Recharging Well

X Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1432

Depth to Water at time of sampling (DTW_3): 20.90

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes: obstructed; 2 hr slow

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(19.70) - (20.90)}{(19.70) - (21.44)} = \frac{-1.20}{-1.74}$$

$$= 31\ \%$$

80% Recharge = 20.04

1432

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name:	ARCO 3037	Well No:	VW- 3
Project Number:	08BP.U3037.06 / 4142	Date:	3/17/06
SECOR Rep: J. Morell	Checked by: GMA	Sample Time:	1253
		Sample No:	VW- 3

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 3

Purging Equipment / Method: ___ Vac Truck ___ Bailer X Submersible Pump ___ Other

pH Temp/Conductivity Meter Type / ID: 3A

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 (10) 12

Casing Diameter (in): 2 (4)

Depth to Water (DTW_1) (ft): 19.50

Total Well Depth (DTB) (ft): 24.19

Water Column: 4.69

Floating Product:

Thickness (in):

Borehole Volume (gal): 7.04

1.5 Borehole Volumes (gal): 10.56

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1107	Started Purging					
1111	22.70	7.5	7.15	23.5	1808	Brown, odorless, cloudy
1113	23.01	11	7.15	23.5	1801	"
1253	19.5	Sample				

Maximum Drawdown (DTW_2) (ft) = 23.01

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1253

Depth to Water at time of sampling (DTW_3): 19.5

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes: 12 VOA Sample

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(19.50) - (19.5)}{(19.50) - (23.01)} = \frac{.0}{3.51} = 100\ \%$$

80% Recharge = 20.20

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name:	ARCO 3037	Well No:	VW- 4
Project Number:	08BP.U3037.06 / 4142	Date:	3/17/06
SECOR Rep: J. Morell	Checked by: GMA	Sample Time:	1322
		Sample No:	VW- 4

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 3

Purging Equipment / Method: ___ Vac Truck ___ Submersible Pump X Bailer ___ Other

pH Temp/Conductivity Meter Type / ID: 3A

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 (10) 12

Casing Diameter (in): 2 (4)

Depth to Water (DTW_1) (ft): ~~2~~ 21.43

Total Well Depth (DTB) (ft): 33.60

Water Column: 12.17

Floating Product:

Thickness (in):

Borehole Volume (gal): 18.26

1.5 Borehole Volumes (gal): 27.38

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1158	Started Purging					
1206	28.65	18.5	7.21	21.6	1572	Brown, odor, cloudy
1215	31.09	27.5	7.21	21.7	1586	"
1322	22.94	Sample				

Maximum Drawdown (DTW_2) (ft) = 31.09

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1322

Depth to Water at time of sampling (DTW_3): ~~31.09~~ 22.94

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(21.43)-(22.94)}{(21.43)-(31.09)} = \frac{1.51}{9.66} = 84\ \%$$

80% Recharge = 23.36

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:	VW- 5
Project Name:	ARCO 3037
Date:	3/17/6
Project Number:	08BP.U3037.06 / 4142
Sample Time:	1312
SECOR Rep: DK	Checked by: CMY
Sample No:	VW- 5

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 21

Purging Equipment / Method: Vac Truck; X Bailer; X Submersible Pump; ___ Other

pH Temp/Conductivity Meter Type / ID: 10

Sampling Method: ___ Teflon Bailer; X Disposable Bailer; ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash; X 3 Stage (Alconox, Tap & DI rinse); Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): 8 (10) 12

Casing Diameter (in): 2 (4)

Depth to Water (DTW_1) (ft): 21.45 @ 11:38

Total Well Depth (DTB) (ft): 27.70

Water Column: 6.25

Floating Product:

Thickness (in):

Borehole Volume (gal): 9.37

1.5 Borehole Volumes (gal): 14.06

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1140	Started Purging					
1146	25.00	9.5	7.18	22.3	1697	BRN, CLOUDY ODORLESS
1150	27.03	14.5	7.10	22.5	1698	" "
1312	22.56	Samp.				

Maximum Drawdown (DTW_2) (ft) = 27.03

H_2O Removal Rate (GPM) =

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1312

Depth to Water at time of sampling (DTW_3): 22.56

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
(6) x 40ml VOAs	(N)	(HCL & ICE) or NONE	GRO, BTEX, MTBE, (8015M, 8260B)
			DIPE, TAME, ETBE, TBA, Ethanol (8260B)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(21.45)-(22.56)}{(21.45)-(27.03)} = \frac{-1.11}{-5.58} = 90\%$$

80% Recharge = 22.56

SEVERN TRENT STL

STL Los Angeles
1721 South Grand Avenue
Santa Ana, CA 92705

Tel: 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

March 31, 2006

STL LOT NUMBER: **E6C200224**
PO/CONTRACT: GEM-6-21909

KURT MYERS
SECOR International Inc
2655 Camino Del Rio North
Suite 302
San Diego, CA 92108-1633

Dear KURT MYERS,

This report contains the analytical results for the 10 samples received under chain of custody by STL Los Angeles on March 20, 2006. These samples are associated with your ARCO #3037 project.

STL Los Angeles certifies that the test results provided in this report meet all the requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA/E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the coolers received for this project can be found on the Project Receipt Checklist.

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains 000033 pages.

Proprietary & Confidential Report

Severn Trent Laboratories, Inc.

CASE NARRATIVE

Historical control limits for the LCS are used to define the estimate of uncertainty for a method.

All applicable quality control procedures met method-specified acceptance criteria except as noted on the following page.

The relative response factor (RRF) for Ethanol does not meet the GCLN criteria for either the initial calibration (ICAL) or the continuing calibration verification (CCV). Even though this criteria was not met, the RRFs for Ethanol were greater than 0.05; which, is consistent with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review and the data is suitable for use.

Please note that Acetone was requested for this project via SW8260B analysis. The client was notified on February 8, 2006 that Acetone would be analyzed under STL LA standard protocol.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Sabina Sudoko
Project Manager
CC: Project File

LOT NUMBER E6C200224

Nonconformance 05-15989

Affected Samples:
E6C200224 (1): TB-3037-20060317
E6C200224 (2): EB-3037-20060317
E6C200224 (3): MW-1
E6C200224 (4): MW-2
E6C200224 (5): MW-4
E6C200224 (6): VW-1
E6C200224 (7): VW-3
E6C200224 (8): VW-4
E6C200224 (9): VW-5
E6C200224 (10): CITYWELL MW-2

Affected Methods:
8015B, 8260B

Details:
Sample "VW-2" was not received but listed on the chain of custody (COC).

Swart, Terry

From: tswart@stl-inc.com
Sent: Tuesday, March 21, 2006 12:25 PM
To: kmyers@secor.com; bauchard@secor.com; adouglas@secor.com; abooth@secor.com
Subject: Information for E6C200224

Sample Confirmatior for E6C200...

****

Lot ID: E6C200224
Project Number: 08BP.03037.08/0427
Project Name/Site: ARCO # 3037

Acknowledgement of samples received for ARCO site # 3037.
Please check the sample confirmation sheet.
Note: Sample "VW-2" is listed on the COC but was not received.
Thank you.

This message and any files transmitted with it are confidential and intended solely for the use of the addressee. If you have received this message in error please notify the sender and destroy your copies of the message and any attached files.

(00251344)
Version: 2.1.10

ARCO SITE#3037

E6C200224

Chain of Custody Record

Project Name: ARCO 3037 Groundwater Monitoring
BP BU/AR Region/Enfos Segment: Retail
State or Lead Regulatory Agency: County of San Diego, DEH
Requested Due Date (mm/dd/yy): Standard TAT

On-site Time:	Temp:
Off-site Time:	Temp:
Sky Conditions:	
Meteorological Events:	
Wind Speed:	Direction:

Lab Name:	STL Los Angeles	BP/AR Facility No.:	3037	Consultant/Contractor:	SECOR
Address:	1721 Grand Ave.	BP/AR Facility Address:	915 Camino del Rio South	Address:	2655 Camino Del Rio North, Suite 302
	Santa Ana, CA 92705-4808	Site Lat/Long:			San Diego, CA 92108
Lab PM:	Sabina Sudoko	California Global ID No.:	T0607300106	Consultant/Contractor Project No.:	08BP.03037.08/0427
Tele/Fax:	714.258.8610	Enfos Project No.:	G0BP4-0008	Consultant/Contractor PM:	Kurt Myers
BP/AR PM Contact:	Kyle Christie	Provision or RCOP:	Provision	Tele/Fax:	619.296.6195/6199
Address:	4 Centerpointe Dr.	Phase/WBS:	Monitoring (04)	Report Type & QC Level:	Normal
	La Palma, Ca 90623	Sub Phase/Task:	Analytical	E-mail EDD To:	kmyers@secor.com
Tele/Fax:	714.670.5303/670-5195	Cost Element:	Subcontracted Cost	Invoice to:	Atlantic Richfield Co.

Lab Bottle Order No:

Item No.	Sample Description	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: Methanol	Requested Analysis: EPA 8015M GRO C6-C12	Requested Analysis: EPA 8260B BTEX, Oxys, MTBE, EtOH	Sample Point Lat/Long and Comments
1	TB-3037-20060317	0700	3/17/06		X			6				X		X	X	Hold
2	EB-3037-20060317	1430						6								Hold
3	MW-1	1229						6						X	X	
4	MW-2	1113						6								
5	MW-4	1017						6								
6	VW-1	1050 ~~1113~~						6								
7	VW-2	1432						6								
8	VW-3	1253						12								
9	VW-4	1322						6								
10	VW-5	1312						6								

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: J. Morell						
Sampler's Company: Secor		3/20/06	15:21		3/20/06	15:21
Shipment Date:						
Shipment Method:						
Shipment Tracking No:		3/20/06	17:00		3/20/06	17:00

Special Instructions: For 8260B, oxys to include: MTBE, TBA, DIPE, TAME, ETBE, EtOH, and Acetone

Custody Seals In Place Yes No Temp Blank Yes No Cooler Temperature on Receipt °F/C Trip Blank Yes No

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor

4.5 - .5 = 4.0

BP COC Rev. 4 10/1/04

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E6C200224

ARCO SITE#3037

E6C200224

Chain of Custody Record

Project Name: ARCO 3037 Groundwater Monitoring
BP BU/AR Region/Enfos Segment: Retail
State or Lead Regulatory Agency: County of San Diego, DEH
Requested Due Date (mm/dd/yy): Standard TAT

On-site Time:	Temp:
Off-site Time:	Temp:
Sky Conditions:	
Meteorological Events:	
Wind Speed:	Direction:

Lab Name:	STL Los Angeles	BP/AR Facility No.:	3037	Consultant/Contractor:	SECOR
Address:	1721 Grand Ave.	BP/AR Facility Address:	915 Camino del Rio South	Address:	2655 Camino Del Rio North, Suite 302
	Santa Ana, CA 92705-4808	Site Lat/Long:			San Diego, CA 92108
Lab PM:	Sabina Sudoko	California Global ID No.:	T0607300106	Consultant/Contractor Project No.:	08BP.03037.08/0427
Tele/Fax:	714.258.8610	Enfos Project No.:	G0BP4-0008	Consultant/Contractor PM:	Kurt Myers
BP/AR PM Contact:	Kyle Christie	Provision or RCOP:	Provision	Tele/Fax:	619.296.6195/6199
Address:	4 Centerpointe Dr.	Phase/WBS:	Monitoring (04)	Report Type & QC Level:	Normal
	La Palma, Ca 90623	Sub Phase/Task:	Analytical	E-mail EDD To:	kmyers@secor.com
Tele/Fax:	714.670.5303/670-5195	Cost Element:	Subcontracted Cost	Invoice to:	Atlantic Richfield Co.

Lab Bottle Order No:

Item No.	Sample Description	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: Methanol	Requested Analysis: EPA 8015M GRO C6-C12	Requested Analysis: EPA 8260B BTEX, Oxys, MTBE, EtOH	Sample Point Lat/Long and Comments
1	City well MW-2	1427	3/17/08		K			6				K		K	K	
2																
3																
4																
5																
6																
7																
8																
9																
10																

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: J. Morell						
Sampler's Company: Secor		3-20-08	15:20		3-20-08	15:20
Shipment Date:						
Shipment Method:						
Shipment Tracking No:		3/20/08	17:00		3/20/08	17:00

Special Instructions: For 8260B, oxys to include: MTBE, TBA, DIPE, TAME, ETBE, EtOH, and Acetone

Custody Seals In Place Yes ___ No ___ Temp Blank Yes ___ No ___ Cooler Temperature on Receipt ___ °F/C Trip Blank Yes ___ No ___

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor

BP COC Rev. 4 10/1/04

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E6C200224

STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 3/20/06

Single Cooler Only

LIMS Lot #: E6C200224 Quote #: 62428

Client Name: SECOR Project: Arco 3037 Groundwater Monitoring

Received by: SG Date/Time Received: 3/20/06 17:00

Delivered by: ☐ Client ☒ STL ☐ DHL ☐ Fed Ex ☐ UPS ☐ Other

****

	Initial / Date
Custody Seal Status Cooler: ☐ Intact ☐ Broken ☒ None	SG 3/20/06
Custody Seal Status Samples: ☐ Intact ☐ Broken ☒ None	
Custody Seal #(s): N/A ☒ No Seal #	
Sampler Signature on COC ☐ Yes ☐ No ☒ N/A	
IR Gun # A Correction Factor -.5 °C IR passed daily verification ☒ Yes ☐ No	
Temperature - BLANK 4.5 °C - .5 CF = 4.0 °C ...Cooler #1 ID N/A	
Temperature – COOLER (°C °C °C °C) = avg °C - .5 CF = °C	
Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☒ N/A	
Sample Container(s): ☐ STL-LA ☐ Client	
pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☒ N/A	
Anomalies: ☐ No ☒ Yes – complete CUR and Create NCM	
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☐ Yes ☒ No	
Labeled by: SG	

****

Turn Around Time: ☐ RUSH–24HR ☐ RUSH–48HR ☐ RUSH–72HR ☒ NORMAL SG 3/20/06

********* LEAVE NO BLANK SPACES ; USE N/A *********

Headspace Anomaly ☐ YES ☒ N/A SG 3/20/06

Lab ID	Container(s) #	Headspace	Lab ID	Container(s) #	Headspace
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm

LIMS Lot # E6C200224

PROJECT RECEIPT CHECKLIST Cont'd

Fraction	1-6	7	8-10											
VOAH	6	12	6											

3/20/06

H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore
AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

Condition Upon Receipt Anomaly Form

Anomalies ☒ YES ☐ N/A 3/20/06

- COOLERS
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- CUSTODY SEALS (COOLER(S)
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- CONTAINER(S)
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- TEMPERATURE (SPECS 4 ± 2°C)
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- CHAIN OF CUSTODY (COC)
  - ☐ Not relinquished by Client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ Other ☐ COC not received – notify PM
- CONTAINERS
  - ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
  - ☐ Broken
  - ☐ Extra
  - ☐ Without Labels
  - ☐ Other:
- LABELS
  - ☐ Not the same ID/info as in COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
  - ☐ Torn
- SAMPLES
  - ☒ Samples NOT RECEIVED but listed on COC
  - ☐ Samples received but NOT LISTED on COC
  - ☐ Logged based on Label Information
  - ☐ Logged based on info from other samples on COC
  - ☐ Logged according to Work Plan
  - ☐ Logged on HOLD UNTIL FURTHER NOTICE
  - ☐ Will be noted on COC–Client to send samples with new COC
  - ☐ Mislabeled as to tests, preservatives, etc.
  - ☐ Holding time expired – list sample ID and test
  - ☐ Improper container used
  - ☐ Not preserved/Improper preservative used
  - ☐ Improper pH _____ Lab to preserve sample and document
  - ☐ Insufficient quantities for analysis ☐ Other

Comments: The Sample I.D'ed as "VW-2" was listed on COC but was not received

☐ Corrective Action Implemented:

☐ Client Informed: verbally on _____ By: _____ ☐ In writing on _____ By: _____

☐ Sample(s) on hold until: _____ ☐ Sample(s) processed "as is."

Logged by/Date: CA 3/20/06 Logged in by other STL ☐ ____ PM Review/Date: 032106

SECOR International Inc

Client Sample ID: MW-1

GC/MS Volatiles

Lot-Sample #...:	E6C200224-003	Work Order #...:	H1L3T1AC	Matrix.....:	W
Date Sampled...:	03/17/06 12:29	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	16:45		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	**1.0**	**1.0**	**ug/L**
Acetone	ND	10	ug/L
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
m-Xylene & p-Xylene	ND	1.0	ug/L
o-Xylene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	ND	25	ug/L
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	86	(75 - 120)
1,2-Dichloroethane-d4	100	(65 - 130)
Toluene-d8	92	(80 - 130)

SECOR International Inc

Client Sample ID: MW-1

GC Volatiles

Lot-Sample #...:	E6C200224-003	Work Order #...:	H1L3T1AA	Matrix.....:	W
Date Sampled...:	03/17/06 12:29	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	04:05		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	79	(70 - 130)

SECOR International Inc

Client Sample ID: MW-2

GC/MS Volatiles

Lot-Sample #...:	E6C200224-004	Work Order #...:	H1L3V1AC	Matrix.....:	W
Date Sampled...:	03/17/06 11:13	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	18:38		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	**5.1**	**1.0**	**ug/L**
Acetone	ND	10	ug/L
Benzene	**75**	**1.0**	**ug/L**
Toluene	**40**	**1.0**	**ug/L**
Ethylbenzene	**63**	**1.0**	**ug/L**
m-Xylene & p-Xylene	**160**	**1.0**	**ug/L**
o-Xylene	**65**	**1.0**	**ug/L**
Xylenes (total)	**230**	**1.0**	**ug/L**
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	ND	25	ug/L
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	101	(75 - 120)
1,2-Dichloroethane-d4	100	(65 - 130)
Toluene-d8	99	(80 - 130)

SECOR International Inc

Client Sample ID: MW-2

GC Volatiles

Lot-Sample #...:	E6C200224-004	Work Order #...:	H1L3V1AA	Matrix.....:	W
Date Sampled...:	03/17/06 11:13	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	04:31		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	860	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	97	(70 - 130)

SECOR International Inc

Client Sample ID: **MW-4**

GC/MS Volatiles

Lot-Sample #...:	E6C200224-005	**Work Order #...:**	H1L3W1AC	**Matrix.....:**	W
Date Sampled...:	03/17/06 10:17	**Date Received..:**	03/20/06 17:00	**MS Run #.....:**	6082289
Prep Date.....:	03/23/06	**Analysis Date..:**	03/23/06		
Prep Batch #...:	6082424	**Analysis Time..:**	17:07		
Dilution Factor:	1				
Analyst ID.....:	000038	**Instrument ID..:**	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L
Acetone	ND	10	ug/L
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
m-Xylene & p-Xylene	ND	1.0	ug/L
o-Xylene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	ND	25	ug/L
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	90	(75 - 120)
1,2-Dichloroethane-d4	104	(65 - 130)
Toluene-d8	94	(80 - 130)

SECOR International Inc

Client Sample ID: MW-4

GC Volatiles

Lot-Sample #...:	E6C200224-005	Work Order #...:	H1L3W1AA	Matrix.....:	W
Date Sampled...:	03/17/06 10:17	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	04:58		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	80	(70 - 130)

SECOR International Inc

Client Sample ID: VW-1

GC/MS Volatiles

Lot-Sample #...:	E6C200224-006	Work Order #...:	H1L301AC	Matrix.....:	W
Date Sampled...:	03/17/06 10:50	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	14:06		
Dilution Factor:	7.14				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	3600	ug/L
Methyl tert-butyl ether (MTBE)	22	7.1	ug/L
Acetone	ND	71	ug/L
Benzene	620	7.1	ug/L
Toluene	190	7.1	ug/L
Ethylbenzene	140	7.1	ug/L
m-Xylene & p-Xylene	280	7.1	ug/L
o-Xylene	110	7.1	ug/L
Xylenes (total)	390	7.1	ug/L
Tert-amyl methyl ether (TAME)	ND	14	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	14	ug/L
tert-Butyl alcohol	2300	180	ug/L
Diisopropyl Ether (DIPE)	ND	14	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	92	(75 - 120)
1,2-Dichloroethane-d4	86	(65 - 130)
Toluene-d8	99	(80 - 130)

SECOR International Inc

Client Sample ID: VW-1

GC Volatiles

Lot-Sample #...:	E6C200224-006	Work Order #...:	H1L301AA	Matrix.....:	W
Date Sampled...:	03/17/06 10:50	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	05:25		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	2200	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	119	(70 - 130)

SECOR International Inc

Client Sample ID: VW-3

GC/MS Volatiles

Lot-Sample #...:	E6C200224-007	Work Order #...:	H1L311AC	Matrix.....:	W
Date Sampled...:	03/17/06 12:53	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	10:19		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	**13**	**1.0**	**ug/L**
Acetone	ND	10	ug/L
Benzene	**38**	**1.0**	**ug/L**
Toluene	**11**	**1.0**	**ug/L**
Ethylbenzene	**11**	**1.0**	**ug/L**
m-Xylene & p-Xylene	**27**	**1.0**	**ug/L**
o-Xylene	**12**	**1.0**	**ug/L**
Xylenes (total)	**39**	**1.0**	**ug/L**
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	**100**	**25**	**ug/L**
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
1,2-Dichloroethane-d4	103	(65 - 130)
Toluene-d8	98	(80 - 130)

SECOR International Inc

Client Sample ID: VW-3

GC Volatiles

Lot-Sample #...:	E6C200224-007	Work Order #...:	H1L311AA	Matrix.....:	W
Date Sampled...:	03/17/06 12:53	Date Received..:	03/20/06 17:00	MS Run #.....:	6086230
Prep Date.....:	03/24/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6086379	Analysis Time..:	21:50		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	130	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	84	(70 - 130)

SECOR International Inc

Client Sample ID: VW-4

GC/MS Volatiles

Lot-Sample #...:	E6C200224-008	Work Order #...:	H1L321AC	Matrix.....:	W
Date Sampled...:	03/17/06 13:22	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	17:30		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	**1.9**	**1.0**	**ug/L**
Acetone	ND	10	ug/L
Benzene	**19**	**1.0**	**ug/L**
Toluene	**38**	**1.0**	**ug/L**
Ethylbenzene	**31**	**1.0**	**ug/L**
m-Xylene & p-Xylene	**70**	**1.0**	**ug/L**
o-Xylene	**43**	**1.0**	**ug/L**
Xylenes (total)	**110**	**1.0**	**ug/L**
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	**740**	**25**	**ug/L**
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	97	(75 - 120)
1,2-Dichloroethane-d4	117	(65 - 130)
Toluene-d8	97	(80 - 130)

SECOR International Inc

Client Sample ID: VW-4

GC Volatiles

Lot-Sample #...:	E6C200224-008	Work Order #...:	H1L321AA	Matrix.....:	W
Date Sampled...:	03/17/06 13:22	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	06:18		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	380	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	87	(70 - 130)

SECOR International Inc

Client Sample ID: VW-5

GC/MS Volatiles

Lot-Sample #...:	E6C200224-009	Work Order #...:	H1L331AC	Matrix.....:	W
Date Sampled...:	03/17/06 13:12	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	17:53		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	**81**	**1.0**	**ug/L**
Acetone	ND	10	ug/L
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
m-Xylene & p-Xylene	ND	1.0	ug/L
o-Xylene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	**28**	**25**	**ug/L**
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	90	(75 - 120)
1,2-Dichloroethane-d4	100	(65 - 130)
Toluene-d8	96	(80 - 130)

SECOR International Inc

Client Sample ID: VW-5

GC Volatiles

Lot-Sample #...:	E6C200224-009	Work Order #...:	H1L331AA	Matrix.....:	W
Date Sampled...:	03/17/06 13:12	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	06:44		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	79	(70 - 130)

SECOR International Inc

Client Sample ID: CITYWELL MW-2

GC/MS Volatiles

Lot-Sample #...:	E6C200224-010	Work Order #...:	H1L341AC	Matrix.....:	W
Date Sampled...:	03/17/06 14:27	Date Received..:	03/20/06 17:00	MS Run #.....:	6082289
Prep Date.....:	03/23/06	Analysis Date..:	03/23/06		
Prep Batch #...:	6082424	Analysis Time..:	18:15		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	**1.4**	**1.0**	**ug/L**
Acetone	ND	10	ug/L
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
m-Xylene & p-Xylene	ND	1.0	ug/L
o-Xylene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	ND	25	ug/L
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	89	(75 - 120)
1,2-Dichloroethane-d4	103	(65 - 130)
Toluene-d8	100	(80 - 130)

SECOR International Inc

Client Sample ID: CITYWELL MW-2

GC Volatiles

Lot-Sample #...:	E6C200224-010	Work Order #...:	H1L341AA	Matrix.....:	W
Date Sampled...:	03/17/06 14:27	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	08:04		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	77	(70 - 130)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E6C200224
MB Lot-Sample #: E6C230000-424

Analysis Date..: 03/23/06
Dilution Factor: 1

Work Order #...: H1VAF1AA

Prep Date.....: 03/23/06
Prep Batch #...: 6082424

Analyst ID.....: 000038

Matrix.....: WATER

Analysis Time..: 09:56
Instrument ID..: MSN

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Ethanol	ND	500	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	SW846 8260B
Acetone	ND	10	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	2.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	2.0	ug/L	SW846 8260B
tert-Butyl alcohol	ND	25	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	88	(75 - 120)
1,2-Dichloroethane-d4	110	(65 - 130)
Toluene-d8	93	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: E6C200224
MB Lot-Sample #: E6C240000-566

Analysis Date..: 03/23/06
Dilution Factor: 1

Work Order #...: H104T1AA

Prep Date.....: 03/23/06
Prep Batch #...: 6083566

Analyst ID.....: 001464

Matrix.....: WATER

Analysis Time..: 20:06
Instrument ID..: G15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
GRO (C6 - C12)	ND	100	ug/L	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	74	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: E6C200224
MB Lot-Sample #: E6C270000-379

Analysis Date..: 03/24/06
Dilution Factor: 1

Work Order #...: H13AG1AA

Prep Date.....: 03/24/06
Prep Batch #...: 6086379

Analyst ID.....: 001464

Matrix.....: WATER

Analysis Time..: 09:50
Instrument ID..: G15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
GRO (C6 - C12)	ND	100	ug/L	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	75	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E6C200224 Work Order #...: H1VAF1AC Matrix.....: WATER
LCS Lot-Sample#: E6C230000-424
Prep Date.....: 03/23/06 Analysis Date..: 03/23/06
Prep Batch #...: 6082424 Analysis Time..: 09:10
Dilution Factor: 1 Instrument ID..: MSN
Analyst ID.....: 000038

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Ethanol	2000	2540	ug/L	127	SW846 8260B
Methyl tert-butyl ether (MTBE)	10.0	9.68	ug/L	97	SW846 8260B
Acetone	50.0	47.3	ug/L	95	SW846 8260B
Benzene	10.0	10.5	ug/L	105	SW846 8260B
Toluene	10.0	10.3	ug/L	103	SW846 8260B
Ethylbenzene	10.0	10.5	ug/L	105	SW846 8260B
m-Xylene & p-Xylene	20.0	21.5	ug/L	108	SW846 8260B
o-Xylene	10.0	10.2	ug/L	102	SW846 8260B
Tert-amyl methyl ether (T	10.0	9.49	ug/L	95	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	10.0	9.53	ug/L	95	SW846 8260B
tert-Butyl alcohol	50.0	63.6	ug/L	127	SW846 8260B
Diisopropyl Ether (DIPE)	10.0	11.0	ug/L	110	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(75 - 120)
1,2-Dichloroethane-d4	120	(65 - 130)
Toluene-d8	100	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: E6C200224
LCS Lot-Sample#: E6C240000-566
Prep Date.....: 03/23/06
Prep Batch #...: 6083566
Dilution Factor: 1
Analyst ID.....: 001464

Work Order #...: H104T1AC
Analysis Date..: 03/23/06
Analysis Time..: 19:39
Instrument ID..: G15

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
GRO (C6 - C12)	**1000**	**901 LW**	**ug/L**	**90**	**SW846 8015B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	115	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LW Quantitated against gasoline.

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: E6C200224
LCS Lot-Sample#: E6C270000-379
Prep Date.....: 03/24/06
Prep Batch #...: 6086379
Dilution Factor: 1
Analyst ID.....: 001464

Work Order #...: H13AG1AC
Analysis Date..: 03/24/06
Analysis Time..: 10:17
Instrument ID..: G15

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
GRO (C6 - C12)	1000	884 LW	ug/L	88	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	110	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LW Quantitated against gasoline.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E6C200224
MS Lot-Sample #: E6C200224-007
Date Sampled...: 03/17/06 12:53
Prep Date.....: 03/23/06
Prep Batch #...: 6082424
Dilution Factor: 1

Work Order #...: H1L311AF-MS
H1L311AG-MSD
Date Received..: 03/20/06 17:00
Analysis Date..: 03/23/06
Analysis Time..: 14:29
Analyst ID.....: 000038

Matrix.....: W
MS Run #.....: 6082289
Instrument ID..: MSN

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Ethanol	ND	2000	1850	ug/L	92		SW846 8260B
	ND	2000	2080	ug/L	104	12	SW846 8260B
Methyl tert-butyl ether (MTBE)	13	10.0	25.8	ug/L	129		SW846 8260B
	13	10.0	25.1	ug/L	122	2.9	SW846 8260B
Acetone	ND	50.0	62.1	ug/L	124		SW846 8260B
	ND	50.0	56.8	ug/L	114	8.9	SW846 8260B
Benzene	38	10.0	50.6	ug/L	130 LM		SW846 8260B
	38	10.0	48.9	ug/L	112	3.4	SW846 8260B
Toluene	11	10.0	21.3	ug/L	101		SW846 8260B
	11	10.0	20.3	ug/L	91	4.9	SW846 8260B
Ethylbenzene	11	10.0	21.4	ug/L	108		SW846 8260B
	11	10.0	20.7	ug/L	101	3.3	SW846 8260B
m-Xylene & p-Xylene	27	20.0	49.5	ug/L	110		SW846 8260B
	27	20.0	47.1	ug/L	98	4.9	SW846 8260B
o-Xylene	12	10.0	22.9	ug/L	109		SW846 8260B
	12	10.0	22.1	ug/L	102	3.4	SW846 8260B
Tert-amyl methyl ether (T	ND	10.0	10.5	ug/L	105		SW846 8260B
	ND	10.0	10.8	ug/L	108	2.6	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	10.0	9.88	ug/L	99		SW846 8260B
	ND	10.0	9.87	ug/L	99	0.10	SW846 8260B
tert-Butyl alcohol	100	50.0	140	ug/L	79		SW846 8260B
	100	50.0	157	ug/L	113	12	SW846 8260B
Diisopropyl Ether (DIPE)	ND	10.0	11.3	ug/L	113		SW846 8260B
	ND	10.0	11.0	ug/L	110	2.2	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
	92	(75 - 120)
1,2-Dichloroethane-d4	84	(65 - 130)
	101	(65 - 130)
Toluene-d8	102	(80 - 130)
	95	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Spiked analyte recovery is outside stated control limits.

LM MS and/or MSD above acceptance limits. See Blank Spike (LCS).

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...:	E6C200224	Work Order #...:	H1L2V1AH-MS H1L2V1AJ-MSD	Matrix.....:	WATER
MS Lot-Sample #:	E6C200223-008				
Date Sampled...:	03/17/06 12:45	Date Received..:	03/20/06 17:00	MS Run #.....:	6083346
Prep Date.....:	03/23/06	Analysis Date..:	03/24/06		
Prep Batch #...:	6083566	Analysis Time..:	03:12		
Dilution Factor:	1	Analyst ID.....:	001464	Instrument ID..:	G15

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
GRO (C6 - C12)	ND	1000	926	ug/L	93 LW		SW846 8015B
	ND	1000	937	ug/L	94 LW	1.2	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	119	(70 - 130)
	121	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LW Quantitated against gasoline.

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: E6C200224
MS Lot-Sample #: E6C200224-007
Date Sampled...: 03/17/06 12:53
Prep Date.....: 03/24/06
Prep Batch #...: 6086379
Dilution Factor: 1

Work Order #...: H1L311AD-MS
H1L311AE-MSD
Date Received..: 03/20/06 17:00
Analysis Date..: 03/24/06
Analysis Time..: 22:16
Analyst ID.....: 001464

Matrix.....: W
MS Run #.....: 6086230
Instrument ID..: G15

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
GRO (C6 - C12)	130	1000	1050	ug/L	93 LW		SW846 8015B
	130	1000	1070	ug/L	94 LW	1.6	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	117	(70 - 130)
	114	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LW Quantitated against gasoline.

SEVERN TRENT STL

STL Los Angeles
1721 South Grand Avenue
Santa Ana, CA 92705

Tel: 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

April 10, 2006

STL LOT NUMBER: **E6C300406**
PO/CONTRACT: GEM-6-21909

KURT MYERS
SECOR International Inc
2655 Camino Del Rio North
Suite 302
San Diego, CA 92108-1633

Dear KURT MYERS,

This report contains the analytical results for the three samples received under chain of custody by STL Los Angeles on March 30, 2006. These samples are associated with your ARCO #3037 project.

STL Los Angeles certifies that the test results provided in this report meet all the requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA/E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the coolers received for this project can be found on the Project Receipt Checklist.

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains 000014 pages.

CASE NARRATIVE

Historical control limits for the LCS are used to define the estimate of uncertainty for a method.

All applicable quality control procedures met method-specified acceptance criteria.

Per instruction from Secor personnel on March 31, 2006, sample Ids for the equipment blank and the trip blank were changed to "EB-3037-20060330" and "TB-3037-20060330."

The relative response factor (RRF) for Ethanol does not meet the GCLN criteria for either the initial calibration (ICAL) or the continuing calibration verification (CCV). Even though this criteria was not met, the RRFs for Ethanol were greater than 0.05; which, is consistent with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review and the data is suitable for use.

Please note that Acetone was requested for this project via SW8260B analysis. The client was notified that Acetone would be analyzed under STL LA standard protocol.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Sabina Sudoko
Project Manager
CC: Project File

Sudoko, Sabina

From: Angie Douglas [adouglas@secor.com]
Sent: Friday, March 31, 2006 3:09 PM
To: Sudoko, Sabina; Kurt Myers; Brian Auchard; Amie Booth
Subject: RE: Information for E6C300406

Sabina,

Please change the following sample IDs:

EB3037-20060330 should be EB-3037-20060330
TB3037-20060330 should be TB-3037-20060330

Thank you,

done

Angie Douglas
SECOR International, Thousand Oaks
805.230.1266 Ext. 286
adouglas@secor.com
-----Original Message-----
From: tswart@stl-inc.com [mailto:tswart@stl-inc.com]
Sent: Friday, March 31, 2006 12:05 PM
To: Kurt Myers; Brian Auchard; Angie Douglas; Amie Booth
Subject: Information for E6C300406

* *

Lot ID: E6C300406
Project Number: 08BP.03037.08/0427
Project Name/Site: ARCO #3037

Acknowledgement of samples received for ARCO site #3037.
Please check the sample confirmation sheet.
Thank you.

This message and any files transmitted with it are confidential and intended solely for the use of the addressee. If you have received this message in error please notify the sender and destroy your copies of the message and any attached files.

[00253289]
Version: 2.1.10

Confidentiality Notice: The information contained in this message is intended only for the use of the addressee, and may be confidential and/or privileged. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately.

E6C300406

Page 1 of 1

Chain of Custody Record

Project Name: ARCO 3037 Groundwater Monitoring
BP BU/AR Region/Enfos Segment: Retail
State or Lead Regulatory Agency: County of San Diego, DEH
Requested Due Date (mm/dd/yy): Standard TAT

On-site Time:	Tetup:
Off-site Time:	Temp:
Sky Conditions:	
Meteorological Events:	
Wind Speed:	Direction:

Lab Name:	STL Los Angeles	BP/AR Facility No.:	3037	Consultant/Contractor:	SECOR
Address:	1721 Grand Ave.	BP/AR Facility Address:	915 Camino del Rio South	Address:	2655 Camino Del Rio North, Suite 302
	Santa Ana, CA 92705-4808	Site Lat/Long:			San Diego, CA 92108
Lab PM:	Sabina Sudoko	California Global ID No.:	T0607300106	Consultant/Contractor Project No.:	08BP.03037.08/0427
Tele/Fax:	714.258.8610	Enfos Project No.:	G0BP4-0008	Consultant/Contractor PM:	Kurt Myers
BP/AR PM Contact:	Kyle Christie	Provision or RCOP:	Provision	Tele/Fax:	619.296.6195/6199
Address:	4 Centerpointe Dr.	Phase/WBS:	Monitoring (04)	Report Type & QC Level:	Normal
	La Palma, Ca 90623	Sub Phase/Task:	Analytical	E-mail EDD To:	kmyers@secor.com
Tele/Fax:	714.670.5303/670-5195	Cost Element:	Subcontracted Cost	Invoice to:	Atlantic Richfield Co.

Lab Bottle Order No:

Item No.	Sample Description	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: Methanol	Requested Analysis: EPA 8015M GRO C6-C12	Requested Analysis: EPA 8260B BTEX, Oxys, MTBE, EtOH	Sample Point Lat/Long and Comments
1	MW-3	1027	3/30		X							X		X	X	
2	EB 3037 2006 03 30	1045	3/30		X							X				HOLD
3	TB 3037 2006 03 30	0730	3/30		X							X				HOLD
4																
5																
6																
7																
8																
9																
10																

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: R. KUMPH						
Sampler's Company: SECOR	R. KUMPH	3-30-06	15:00	[signature]	3-30-06	15:00
Shipment Date:	SECOR					
Shipment Method:						
Shipment Tracking No:	[signature]	3-30-06	17:00	[signature]	3-30-06	17:00

Special Instructions: For 8260B, oxys to include: MTBE, TBA, DIPE, TAME, ETBE, EtOH, and Acetone

Custody Seals In Place Yes No Temp Blank Yes No Cooler Temperature on Receipt ____ °F/C Trip Blank Yes No

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor

BP COC Rev. 4 10/1/04

ARCO SITE# 3037

4

E6C300406

STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 3-30-06

Single Cooler Only

LIMS Lot #: E6C300406 Quote #: 62428

Client Name: Secor Project: Arco 3037 Groundwater Monitoring

Received by: AG Date/Time Received: 3-30-06 1720

Delivered by : ☐ Client ☑ STL ☐ DHL ☐ Fed Ex ☐ UPS ☐ Other

****

	Initial / Date
Custody Seal Status Cooler: ☐ Intact ☐ Broken ☑ None	3-30-06 AG
Custody Seal Status Samples: ☐ Intact ☐ Broken ☑ None	
Custody Seal #(s): ☑ No Seal #	
Sampler Signature on COC ☑ Yes ☐ No ☐ N/A	
IR Gun # A Correction Factor -.5 °C IR passed daily verification ☑ Yes ☐ No	
Temperature - BLANK 5.7 °C - .5 CF = 5.2 °C ... Cooler #1 ID NA	
Temperature – COOLER (°C °C °C °C) = avg °C - .5 CF = °C	
Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☑ N/A	
Sample Container(s): ☑ STL-LA ☐ Client	
pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☑ N/A	
Anomalies: ☑ No ☐ Yes – complete CUR and Create NCM	
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☑ Yes ☐ No	
Labeled by: CA	

****

Turn Around Time: ☐ RUSH–24HR ☐ RUSH–48HR ☐ RUSH–72HR ☑ NORMAL 3-30-06 AG

********** LEAVE NO BLANK SPACES ; USE N/A **********

Headspace Anomaly ☐ YES ☑ N/A 3-30-06 AG

Lab ID	Container(s) #	Headspace	Lab ID	Container(s) #	Headspace
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm

LIMS Lot # E6C300406

PROJECT RECEIPT CHECKLIST Cont'd

Fraction	F-3													
VOAH	6													

3-30-06 AG

H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

Condition Upon Receipt Anomaly Form

Anomalies ☐ YES ☑ N/A 3-30-06

COOLERS
- ☐ Not Received (received COC only)
- ☐ Leaking
- ☐ Other:

CUSTODY SEALS (COOLER(S)
- ☐ None
- ☐ Not Intact
- ☐ Other

CONTAINER(S)
- ☐ None
- ☐ Not Intact
- ☐ Other

TEMPERATURE (SPECS 4 ± 2°C)
- ☐ Cooler Temp(s)
- ☐ Temperature Blank(s)

CHAIN OF CUSTODY (COC)
- ☐ Not relinquished by Client; No date/time relinquished
- ☐ Incomplete information provided
- ☐ Other ☐ COC not received – notify PM

CONTAINERS
- ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
- ☐ Broken
- ☐ Extra
- ☐ Without Labels
- ☐ Other:

LABELS
- ☐ Not the same ID/info as in COC
- ☐ Incomplete Information
- ☐ Markings/Info illegible
- ☐ Torn

SAMPLES
- ☐ Samples NOT RECEIVED but listed on COC
- ☐ Samples received but NOT LISTED on COC
- ☐ Logged based on Label Information
- ☐ Logged based on info from other samples on COC
- ☐ Logged according to Work Plan
- ☐ Logged on HOLD UNTIL FURTHER NOTICE

- ☐ Will be noted on COC--Client to send samples with new COC
- ☐ Mislabeled as to tests, preservatives, etc.
- ☐ Holding time expired – list sample ID and test
- ☐ Improper container used
- ☐ Not preserved/Improper preservative used
- ☐ Improper pH _____ Lab to preserve sample and document
- ☐ Insufficient quantities for analysis ☐ Other

Comments:

☐ Corrective Action Implemented:

☐ Client Informed: verbally on _____ By: _____ ☐ In writing on _____ By: _____

☐ Sample(s) on hold until: _____ ☐ Sample(s) processed "as is."

Logged by/Date: CA 3/30/06 Logged in by other STL ☐ ____

PM Review/Date: 03/30/06

SECOR International Inc

Client Sample ID: MW-3

GC/MS Volatiles

Lot-Sample #...:	E6C300406-001	**Work Order #...:**	H2CM71AC	**Matrix.....:**	W
Date Sampled...:	03/30/06 10:27	**Date Received..:**	03/30/06 17:00	**MS Run #.....:**	6095262
Prep Date.....:	04/05/06	**Analysis Date..:**	04/05/06		
Prep Batch #...:	6095434	**Analysis Time..:**	18:06		
Dilution Factor:	1				
Analyst ID.....:	000038	**Instrument ID..:**	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Ethanol	ND	500	ug/L
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L
Acetone	ND	10	ug/L
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
m-Xylene & p-Xylene	ND	1.0	ug/L
o-Xylene	ND	1.0	ug/L
Xylenes (total)	ND	1.0	ug/L
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L
tert-Butyl alcohol	ND	25	ug/L
Diisopropyl Ether (DIPE)	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	87	(75 - 120)
1,2-Dichloroethane-d4	90	(65 - 130)
Toluene-d8	90	(80 - 130)

SECOR International Inc

Client Sample ID: MW-3

GC Volatiles

Lot-Sample #...:	E6C300406-001	Work Order #...:	H2CM71AA	Matrix.....:	W
Date Sampled...:	03/30/06 10:27	Date Received..:	03/30/06 17:00	MS Run #.....:	6096173
Prep Date.....:	04/05/06	Analysis Date..:	04/05/06		
Prep Batch #...:	6096315	Analysis Time..:	16:10		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	ND	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	81	(70 - 130)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E6C300406
MB Lot-Sample #: E6D050000-434

Analysis Date..: 04/05/06
Dilution Factor: 1

Work Order #...: H2NVC1AA

Prep Date.....: 04/05/06
Prep Batch #...: 6095434

Analyst ID.....: 000038

Matrix.....: WATER

Analysis Time..: 10:29
Instrument ID..: MSN

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Ethanol	ND	500	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	SW846 8260B
Acetone	ND	10	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	2.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	2.0	ug/L	SW846 8260B
tert-Butyl alcohol	ND	25	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	86	(75 - 120)
1,2-Dichloroethane-d4	100	(65 - 130)
Toluene-d8	91	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: E6C300406
MB Lot-Sample #: E6D060000-315

Analysis Date..: 04/05/06
Dilution Factor: 1

Work Order #...: H2P6K1AA

Prep Date.....: 04/05/06
Prep Batch #...: 6096315

Analyst ID.....: 001464

Matrix.....: WATER

Analysis Time..: 12:10
Instrument ID..: G15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
GRO (C6 - C12)	ND	100	ug/L	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	82	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E6C300406 Work Order #...: H2NVC1AC Matrix.....: WATER
LCS Lot-Sample#: E6D050000-434
Prep Date.....: 04/05/06 Analysis Date..: 04/05/06
Prep Batch #...: 6095434 Analysis Time..: 09:44
Dilution Factor: 1 Instrument ID..: MSN
Analyst ID.....: 000038

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Ethanol	2000	2370	ug/L	118	SW846 8260B
Methyl tert-butyl ether (MTBE)	10.0	9.71	ug/L	97	SW846 8260B
Acetone	50.0	49.2	ug/L	98	SW846 8260B
Benzene	10.0	9.58	ug/L	96	SW846 8260B
Toluene	10.0	10.4	ug/L	104	SW846 8260B
Ethylbenzene	10.0	10.0	ug/L	100	SW846 8260B
m-Xylene & p-Xylene	20.0	21.2	ug/L	106	SW846 8260B
o-Xylene	10.0	10.2	ug/L	102	SW846 8260B
Tert-amyl methyl ether (T	10.0	9.10	ug/L	91	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	10.0	9.04	ug/L	90	SW846 8260B
tert-Butyl alcohol	50.0	45.1	ug/L	90	SW846 8260B
Diisopropyl Ether (DIPE)	10.0	10.6	ug/L	106	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	97	(75 - 120)
1,2-Dichloroethane-d4	92	(65 - 130)
Toluene-d8	97	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: E6C300406
LCS Lot-Sample#: E6D060000-315
Prep Date.....: 04/05/06
Prep Batch #...: 6096315
Dilution Factor: 1
Analyst ID.....: 001464

Work Order #...: H2P6K1AC
Analysis Date..: 04/05/06
Analysis Time..: 12:36
Instrument ID..: G15

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
GRO (C6 - C12)	1000	915 LW	ug/L	92	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	116	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LW Quantitated against gasoline.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E6C300406 Work Order #...: H2H3F1AD-MS Matrix.....: WATER
MS Lot-Sample #: E6D030244-003 H2H3F1AE-MSD
Date Sampled...: 04/03/06 11:40 Date Received..: 04/03/06 15:30 MS Run #.....: 6095262
Prep Date.....: 04/05/06 Analysis Date..: 04/05/06
Prep Batch #...: 6095434 Analysis Time..: 15:27
Dilution Factor: 1 Analyst ID.....: 000038 Instrument ID..: MSN

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Ethanol	ND	2000	2370	ug/L	118		SW846 8260B
	ND	2000	2060	ug/L	103	14	SW846 8260B
Methyl tert-butyl ether (MTBE)	1.2	10.0	10.9	ug/L	97		SW846 8260B
	1.2	10.0	11.1	ug/L	99	1.6	SW846 8260B
Acetone	ND	50.0	54.2	ug/L	108		SW846 8260B
	ND	50.0	52.3	ug/L	105	3.5	SW846 8260B
Benzene	ND	10.0	9.56	ug/L	96		SW846 8260B
	ND	10.0	9.61	ug/L	96	0.52	SW846 8260B
Toluene	ND	10.0	9.89	ug/L	99		SW846 8260B
	ND	10.0	10.1	ug/L	101	2.5	SW846 8260B
Ethylbenzene	ND	10.0	9.91	ug/L	99		SW846 8260B
	ND	10.0	10.4	ug/L	104	4.5	SW846 8260B
m-Xylene & p-Xylene	ND	20.0	20.3	ug/L	102		SW846 8260B
	ND	20.0	21.2	ug/L	106	4.3	SW846 8260B
o-Xylene	ND	10.0	10.2	ug/L	102		SW846 8260B
	ND	10.0	10.5	ug/L	105	2.8	SW846 8260B
Tert-amyl methyl ether (T	ND	10.0	8.80	ug/L	88		SW846 8260B
	ND	10.0	8.87	ug/L	89	0.79	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	10.0	8.88	ug/L	89		SW846 8260B
	ND	10.0	8.90	ug/L	89	0.22	SW846 8260B
tert-Butyl alcohol	ND	50.0	77.5	ug/L	155 LM		SW846 8260B
	ND	50.0	46.6	ug/L	93 BA	50	SW846 8260B
Diisopropyl Ether (DIPE)	ND	10.0	10.4	ug/L	104		SW846 8260B
	ND	10.0	10.6	ug/L	106	1.4	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	95	(75 - 120)
	97	(75 - 120)
1,2-Dichloroethane-d4	100	(65 - 130)
	99	(65 - 130)
Toluene-d8	94	(80 - 130)
	97	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

BA Relative percent difference out of control

Spiked analyte recovery is outside stated control limits.

LM MS and/or MSD above acceptance limits. See Blank Spike (LCS).

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...:	E6C300406	Work Order #...:	H2CMC1AD-MS H2CMC1AE-MSD	Matrix.....:	WATER
MS Lot-Sample #:	E6C300402-001				
Date Sampled...:	03/28/06 10:03	Date Received..:	03/30/06 17:00	MS Run #.....:	6096173
Prep Date.....:	04/05/06	Analysis Date..:	04/05/06		
Prep Batch #...:	6096315	Analysis Time..:	14:50		
Dilution Factor:	1	Analyst ID.....:	001464	Instrument ID..:	G15

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
GRO (C6 - C12)	**1500**	**1000**	**2650**	**ug/L**	**117 LW**		**SW846 8015B**
	1500	**1000**	**2850**	**ug/L**	**137 LW**	**7.3**	**SW846 8015B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	116	(70 - 130)
	122	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LW Quantitated against gasoline.